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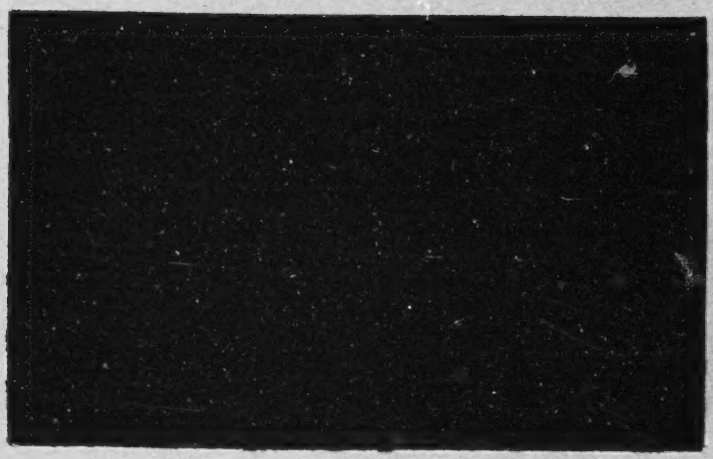
ABSTRACT

This report discusses the linear-process relationships in a 2-year replicated study relating observed teacher behavior to measured learning gains. Correlations relate high and low inference measures of teacher behavior to measures of student learning gain on five achievement tests. The sample involved second and third grade teachers, selected because of a high consistency in the degrees of student learning gain that they produced on standardized achievement tests, and their students. The authors conclude that (a) data taken from these early elementary grades contrast in many ways with previous findings from higher levels, and (b) the pattern of teaching behavior that appeared optimal for producing student learning gain in low socioeconomic status (SES) schools differed considerably from that which appeared optimal for producing student learning gain in high SES schools. (A 20-item bibliography and 6 tables are included.) (Author/PD)



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Process-Product Correlations in the Texas Teacher Effectiveness Study: Final Report[1]

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Footnotes to Title and Author

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Process-Product Correlations in the Texas Teacher Effectiveness Study: Final Report

The Texas Teacher Effectiveness Study has been a naturalistic investigation of the presage and process correlates of the relative success of second and third grade teachers in producing student learning gains on standardized achievement tests. Although the search for presage and process correlates of teachers' ability to produce student learning gains is an old one, it has produced weak and often conflicting results, at least until recently (Rosenshine and Furst, 1973, Dunkin and Biddle, 1974). Although the present study is similar to previous studies in this tradition in its underlying logic and intent, it introduced several methodological innovations in the hope that, in combination, they would be more successful in identifying presage and process correlates of teacher effectiveness (hereafter defined as the relative ability to produce student learning gains on standardized achievement tests, but recognizing that this is by no means the only or even necessarily the best criterion) than previous studies had been.

Several of the most important innovations had to do with sample selection. A review of teacher effectiveness by Rosenshine (1970) revealed only five studies conducted over long periods of time (a semester or more) that contained any information on teacher reliability in producing student learning gains. One of these studies involved instructors teaching special short courses in military topics to Air Force recruits, and two of the others involved teachers implementing an innovative curriculum. Neither of these seem generalizable to everyday classrooms in ordinary schools. The remaining two studies were

conducted on ordinary teachers in ordinary schools, but the reliability coefficients were disappointing. One study didn't give a specific coefficient but reported that reliability was quite low, while the stability coefficient in the second study was .09 (Rosenshine, 1970). These data cast doubt upon the entire enterprise of searching for correlates of teacher effectiveness, since they suggested that teacher effectiveness does not exist as a stable teacher variable or trait.

However, inspection of the data in teacher effectiveness studies revealed that the majority of studies in this area have involved student teachers, new teachers, teachers implementing a new curriculum, or random samples of teachers which probably contained considerable proportions of the types of teachers mentioned above. These teachers have in common the high probability that their classroom behavior, and thus their probable success in producing student learning gains, will be variable over a two- or three-year period as they adjust to teaching in general or to teaching the particular new curriculum they are learning to teach. In short, it seemed to us that researchers seeking correlates of teacher effectiveness were handicapping themselves from the start if they did not restrict their sample to teachers who were experienced in teaching the curriculum and grade level at which they were working. After a few years of experience in a reasonably constant setting, teachers could be expected to have established a stable style or pattern of teaching, and thus to be much more appropriate as subjects in a study of the correlates of teaching effectiveness than teachers who were already known to be in the process of changing their behavior or teachers who were unknown quantities with regard to this constancy vs. change dimension.

A second implication of Rosenshine's data was that teacher effectiveness might not be a stable trait, even if experienced teachers were studied. Thus, the first order of business was to collect effectiveness data on a sample of experienced teachers in order to find out whether or not they showed the kind of extreme instability that Rosenshine had found in the five studies he reviewed. The Texas Teacher Effectiveness Project began with this search. One hundred sixty-five second and third grade teachers, who comprised the entire teaching staff who had been working at the same grade level (either second or third) for a period of four years or more in an urban school district, were selected for study. The district administered certain subtests of the Metropolitan Achievement Tests each fall to all of the students in these grades, and these data were available in the files. Stability of teacher effectiveness was assessed by collecting the grade level equivalent scores of each student on each of the subtests included (Word Knowledge, Word Discrimination, Reading, Arithmetic Computation, and Arithmetic Reasoning), computing residual gain scores from one year to the next, and then computing mean residual gain scores for each teacher's classes across three consecutive years. The data on a fourth year were added later, when teachers were selected for observational study.

The details of the teacher selection search have been reported previously (Brophy, 1973; Veldman and Brophy, 1974). Briefly, it was found that about one-half of the subtest patterns for individual teachers showed some form of constancy (either linear constancy across four years, linear gain, or linear drop), while the other half of the patterns showed erratic inconsistency. Although girls outperformed boys in the raw scores, as expected, the teachers tended to be <u>relatively</u> equally effective in producing learning gains in boys

vs. girls. Only four of the 165 teachers showed a clearcut tendency to produce learning gains either in boys or in girls.

Also, teacher effectiveness scores tended to interrelate fairly highly within years across subtests. Thus, although there were a few teachers who regularly obtained higher achievement gains in language arts than in math or vice versa, the majority of the teachers obtained similar relative student learning gains across these two subject matter areas.

There was a clearcut year or class cohort effect in the data even though residual scores were used, indicating that certain factors operating within a given year (perhaps teacher and/or student health, class leadership and cooperation, or similar factors that might make an important difference in the learning gains of the entire class within a given school year) were not eliminated even through the residualizing process (Brophy, 1973).

The obtained stability coefficients for mean gain on a given subtest from one year to the next were much higher than those noted in Rosenshine's review. Although a few were low, the great majority were between .30 and .50. Although these certainly are not high enough to justify the use of standardized achievement tests for teacher accountability purposes, they were high enough to make possible the selection from the total sample of teachers a subsample who were notably consistent across four years in the relative amounts of student learning gains that they produced across the five subtests of the Metropolitan Achievement Tests, across the two sexes, and across time (four years).

Thus, sample selection procedures for this study involved not only the restriction of the sample to teachers who were likely to have developed some

consistency in their pattern of classroom teaching; they also involved selection of teachers who had already demonstrated a tendency to be relatively consistent in the kinds of student learning gains which they produced. These two factors in combination are among the more important innovations involved in this research. By selecting teachers who had shown high consistency in their measured effectiveness and who also could be expected to show relatively high consistency in their classroom process behavior, we probably increased the probability of finding meaningful and valid process-product relationships between teacher behavior and student learning, compared to earlier studies which had used student teachers, teachers starting a new curriculum, or random samples of teachers.

Procedures

This research was a two-year replicated study of the presage and process correlates of student learning gain. The design and procedural aspects of the study will be summarized briefly here, since they have been discussed in detail in several previous reports dealing with the design of the study as a whole or with the data from the first year of investigation (Brophy, 1973, 1974; Brophy and Evertson, 1973a, 1973b, 1974a; Evertson and Brophy, 1973, Peck and Veldman, 1973; Veldman and Brophy, 1974). These reports contain detailed information including copies of the instruments used and tables showing the complete data, for readers interested in this material.

Sample Selection

As noted above, the teachers included in the sample were those who had shown relative constancy in the degree of student learning gains they produced

across the two sexes and the five subtests of the Metropolitan Achievement Tests, across four consecutive years of study. Thirty-one teachers were included in the first year of study. These thirty-one were the most consistent in the sample who were still teaching at the same grade level at the time the study was begun (1971-1972 school year). The second year of the study involved 28 teachers, including 19 who had been in the study the year before. Thus, the replication the second year involved 19 of the same teachers studied the first year, but it also involved nine new teachers and the elimination of 12 teachers studied previously. The majority of the teachers studied the first year who were dropped the second year were dropped because they were transferred to a new grade, although a few retired, a few went on maternity leave, and a few refused further continuation.

Data Collection Instruments

Following the advice of several critics of process-product research in teacher effectiveness, we deliberately included both low inference and high inference measures in assessing teacher behavior. The low inference measurement system was an expansion and adaptation of the Brophy-Good Dyadic Interaction Observation System (Brophy and Good, 1970), which is designed to record each interaction that the teacher shares with a single individual child (as opposed to lecturing or other teacher behavior that is directed at the entire class or at a group). This instrument was selected because it subsumes a wide range of variables, including most of those stressed by the observational systems that have been used most frequently in previous educational research, as well as some unique to this system. The major adaptations and expansions were done to add variables based on Kounin's (1970) research on classroom management techniques, and to break down teacher behavior more finely according to context

variables having to do with the time and nature of classroom interaction during which a particular observation took place. The variables will be described more fully in the results section when the process-product data from this low inference instrument are presented (the coding manual is included in Brophy and Evertson, 1973b). Teachers were observed with this instrument 4 times the first year and 14 times the second year. The first year, since the observation system was new and the observers were newly trained, observers worked in pairs and their scores were averaged. Since observer agreement was generally quite high, in the second year observers worked in pairs until they reached an 80% reliability criterion (procedures are specified in Brophy and Good, 1970, for training observers and assessing reliability), and then worked singly. Teachers were observed only 4 times during the first year of study due to financial constraints; obviously, considerations of the reliability of teacher behavior from one observational visit to the next dictate that the teachers be observed as many times as possible in order to obtain a reliable and valid index of their typical classroom behavior. This was approached much more closely in the second year of study, in which we were able to observe teachers 14 times each.

Here, each teacher was observed by two coders who alternated in visiting the classroom. Pairs of coders were assigned to a given teacher so that reliability on high inference ratings and other high inference measures could be obtained. A variety of high inference measures of teacher behavior were used. One was a set of 12 classroom observation scales based on factor analytic studies of five of the more heavily used observation systems in existence (Emmer and Peck, 1973). These were five-point scales that were rated several times on each classroom visit by the observer, and then averaged to obtain a score for each teacher. The variables were among those most heavily stressed

by Flanders, Medley, Smith, and other major figures in the development and application of classroom observation systems. Other high inference instruments included rating scales and checklists geared to get at aspects of teaching which are observable in repeated exposures to the teacher but which are difficult to measure reliably or validly through low inference observations of specific, concrete interactions. These include such variables as teacher warmth, democratic vs. authoritarian leadership style, child orientation, credibility with students, and the like. Variables such as these are not only easy to rate reliably by raters familiar with teachers; there is reason to believe that this measurement method is preferable to low inference coding when the variable is not amenable to coding of frequent discrete units of behavior (Rosenshine and Furst, 1973).

One instrument was used in a low inference manner the first year but in a high inference manner the second year. This was an instrument designed to measure aspects of teachers' lesson presentation, particularly the amounts of time (if any) devoted to various activities that teachers sometimes include in lessons. The first year these data were collected from a subsample of 10 of the teachers who were observed twice while they taught lessons. The data were collected in a low inference manner which involved actual timing of the different aspects of the lessons observed. During the second year this low inference method was abandoned because it required separate visits to the classroom (it was not possible for coders to code with this method and code with the other low inference system at the same time), so that rather than get only seven observations with each system, we decided to get 14 observations with the larger

system and get the other information through high inference ratings). Consequently, in the second year all 28 teachers involved in the study were measured on these aspects of lesson presentation, but they were measured through high inference estimates of the average amount of time that they typically spent in various activities during structured lesson times.

In addition to these high and low inference process measures of teaching behavior, presage data were collected from the teachers during both years of study. The first year, each teacher filled out the COMPASS battery developed by the Research and Development Center for Teacher Education (Veldman, 1972). This is a battery of pen and paper tests designed to measure attitudes and orientations toward teaching, coping skills, defense mechanisms, personality variables, and assorted other traits and attitudes, particularly related to teaching. The battery was developed for use in diagnosing the personal needs of preservice teachers as an aid in helping to make decisions about counseling them during their preservice teaching preparation, and it was used with inservice teachers in the present project to see what correlates would emerge between variables it measures and the teachers' success in producing student learning gains. These data were reported previously (Peck and Veldman, 1973).

In the second year, presage variables were collected from the 28 teachers via a questionnaire and an interview. The questionnaire contained 495 items culled from a variety of sources and measuring a great variety of variables. Included were such matters as the teacher's attitudes toward teaching, perceived satisfactions and dissatisfactions and their sources, leadership style preferences, process vs. product orientation, and a great many other variables. In addition,

each teacher was interviewed with a 165-item interview designed to allow the teacher an opportunity to respond freely to questions dealing with opinions about classroom management, curriculum and instruction, the differential needs of different social classes and ethnic groups, and other matters. The interview and questionnaire data will be described in a forthcoming paper by Evertson and Brophy (1974).

During the second year the students in each teacher's class were administered the SET II test (Haak, Kleiber, and Peck, 1972), a student self-report measure designed to reveal students' perceptions of the teacher on three major dimensions: stimulating interactive style (vs. dull and uninspiring), unreasonable negativity (vs. reasonableness), and fosterance of positive self-esteem (vs. tendency to things that would lower self-esteem). Although this instrument had shown good reliability and favorable indicators of validity in previous development work, unfortunately it proved to be invalid for measuring the affective perceptions of the students in the present study. The correlations obtained with it were conflicting and contradictory, and gave no evidence that they reflected the students' actual evaluations of their teachers. The data appeared to reflect various response sets, especially yea-saying. Consequently, data on this instrument will not be reported. Therefore, we do not have direct product data on affective criteria, although inferences can be drawn about the affective aspects of teaching from the low and high inference process observation data and from the interview and questionnaire data obtained from each of the teachers.

Data Analyses

In both years, the basic plan was to analyze the associations between presage or process measures of the teachers and the five student gain criteria (mean residual gains across four years on each of the five subtests of the Metropolitan Achievement Tests). The present report will deal only with the Pearson correlations between process measures and the student gain product criteria. However, we also intend to carry out analyses geared to indicate nonlinear relationships. These were done last year (Brophy and Evertson, 1973b), and they were generally the most useful and complete data on the relationships involved. Thus, readers seeking more complete data should consult this forthcoming report (Brophy and Evertson, 1974b).

In any case, the data analyses involved summing the data for each teacher across all observations. A few means were computed by dividing totals in each category by the amount of time that the teacher was observed. These means, and other percentage scores that were derived by arithmetic manipulations of raw scores, were then correlated with student learning gain criteria. The high inference data were treated as follows. Each teacher, as noted above, was observed by two observers who more or less alternated their observations and therefore both became familar with the teacher and her typical classroom behavior. At the end of the year, each of the two observers independently rated each teacher on all of the high inference measures. These measures were then summed to obtain a mean rating for the two observers, and interobserver reliability figures were computed. The mean ratings were then used as the measures for the high inference data, and were correlated with the student learning gain scores.

The data to be presented in the following tables are from these low inference and high inference correlational analyses. In each case, three sets of correlations were obtained for each of the student gain criteria. One was for the total group of 28 teachers (or fewer, in cases where certain teachers had no data on a particular variable). The second and third sets of correlations are for low and high SES (socioeconomic status) schools. SES data were obtained by having six administrators of the school district involved characterize the 50 elementary schools in the district on a forced-choice, seven-point scale of SES (with choices forced to approximate a normal distribution). These administrator ratings, which were done independently but showed very high agreement (r's all $> .90$), were then summed across schools to obtain a total score for each school. This score was used as the index of SES for each school, and was included in some correlational analyses that were performed for other purposes. For the present report, however, the scores in this distribution were split at the median, with 15 schools classified as high SES and 15 as low SES. Correlational analyses within the two social class groups were then performed in addition to the correlational analyses for the total sample of teachers, because last year's data showed that there were many contrasting patterns in the kinds of teaching that appeared to be optimal in these two different types of schools.

Results

For convenience, the data will be presented in sets clustered together because they are derived from the same measurement instrument or set of instruments. Integration of the data from different data sets will be reserved for the discussion section, for the most part.

Readers should bear in mind several general points which are mentioned here in order to provide advance organizers or a general set towards the specific data to follow. First, the data consist of correlations between various low inference and high inference process measures of teacher behavior and five measures of student learning gain. These five criterion measures are the four-year means for each teacher's class on each of the five subtests of the Metropolitan Achievement Test battery for which data were available. Correlations are presented in sets of three for each process-product relationship for which sufficient data were available. In each set, the top correlation coefficient is for the total sample (maximum $\underline{N}$ = 31 the first year and 28 the second year, but $\underline{N}$'s frequently were below the maximum due to missing data). Correlation coefficients for the low SES and high SES subsamples are presented below the coefficients for the total sample. The coefficients on the lower left are for the low SES sample (maximum $\underline{N}$ = 13 each year). Correlations for the high SES subsample are presented on the lower right side (maximum $\underline{N}$ = 18 the first year and 15 the second year). Data on the left side of each table are for year one, and data on the right side are for year two.

Readers who have possession of our earlier reports (Brophy and Evertson, 1973a; Evertson and Brophy, 1973) may notice a few differences in the correlation coefficients and a few places where data are absent from the tables when data were present in last year's reports. The discrepancies are due to errors in the tables of the two previous reports which have since then been discovered and corrected. These all turned out to be relatively minor and none involve any change in the interpretation of the data. The omission of correlation coefficients

from tables in this year's report when they were present in last year's report reflects our conclusion that when N's are too low to allow meaningful interpretation of the data, the data should be omitted entirely rather than presented when they might create false impressions or conclusions. Thus, certain correlation coefficients which were included in the tables last year but which were based on a very low number of teachers have been omitted entirely from the tables in the present report.

An arbitrary cutoff of six or more teachers was used as the basis for including or excluding data from the tables. Thus, absence of correlation coefficients indicates that variance was not present in the score distribution of the process variable involved for at least six teachers. Usually this meant that all or almost all of the teachers had no variance at all (zero scores), although in a few instances of five-point scale ratings, omission of scores reflects the fact that all of the teachers or almost all of the teachers were assigned the same rating and thus there was not enough variance in the distribution to allow meaningful interpretation of the correlations. To summarize and rephrase, data have been included in the tables only when variance was present for six or more teachers on the process variable involved.

Statistical significance is indicated in the tables through underlining. Where correlations are high enough to yield probabilities below .05, the coefficients are underlined twice. Where the correlations are high enough to reach probabilities below .10 but above .05, the coefficients are underlined once. The underlinings are presented more as a general guide and convenience for interpreting the data rather than as serious estimates of the statistical

probability of the obtained correlation coefficient, since one of the assumptions underlying the use of probability statistics has seriously been violated by the fact that we have several times more variables than subjects both years. Thus, the underlinings indicate strength of the relationship, but they are not probability statements in the same sense that they would be in a study which met all of the assumptions underlying the use of probability statistics. We were well aware of the fact that we were violating statistical assumptions by including many more variables than subjects, but we felt that at this stage of process-product research, when the state-of-the-art generally is still rather primitive and we are primarily attempting to generate hypotheses rather than test them, we should include any and all variables that might conceivably be related to teacher effectiveness (as defined), rather than restrict the study to a small number of variables. We still feel that this decision was a sound one. First, we replicated our own study by collecting data across separate years, thereby reducing the need to depend upon probability statistics to evaluate the reality and strength of findings. Second, we have generated a large number of testable hypotheses that ourselves and others can now proceed to check out experimentally.

In general, the findings are similar to those in previous process-product studies in the sense that they consist of mutually supportive but relatively weak correlations rather than extremely strong correlations. Thus, although this study produced more broad-based and in many ways more specific and prescriptive findings than previous studies, it was not successful in producing notably higher process-product correlations.

Process-product correlations tend to be in the same direction for a given process variable, except for a few obvious exceptions such as the amount of time devoted to language arts and the amount of time devoted to math. Thus, within this sample, the tendency to produce learning gains was general rather than specific to one of the subtests of the Metropolitan battery, and a given process variable tended to correlate the same way (although not always to the same degree) with the five different learning criteria. However, this is at least in some degree a function of the sample, because the teachers were selected because of their general consistency in producing student learning gains. A needed and useful study would be one that compared teachers who were successful in one realm such as language arts with teachers who were less successful in language arts but more successful in another realm such as math. This might be difficult to do, however, because our own data collected in preparing this study showed that most teachers were rather general in their effects, with very few being clearly superior in one sphere compared to another. In any case, if the appropriate sample could be identified, such a group of teachers would be especially useful for study and for identifying the curriculum and methodology aspects of teaching success in different curriculum areas.

A final general point to bear in mind in going through the data is that they tend to make much more sense when considered separately for low and high SES groups than they do when considered for the total group. In a sense this is one of the major findings of our study, indicating as it does that the kind of teaching that leads to optimal learning gains in high SES schools differs systematically and considerably from the kind of teaching that leads to optimal

learning gains in the same grade in low SES schools. To the extent that SES school differences primarily reflect differences in the abilities or levels of cognitive maturity of the students in the schools, these data in effect constitute a broad set of aptitude-treatment interaction hypotheses and help point the way towards more prescriptive advice about teaching particular kinds of students as opposed to the typical tendency to present particular teaching techniques or teacher characteristics as good or bad for all students and in all contexts. We will return to this point frequently during the presentation of the data and the discussion. In any case, it is the rule rather than the exception that process-product correlations hold for one of the two SES groups but not the other rather than for both groups.

High Inference Measures

Data from the 12 high inference measures resulting from the factor analytic study by Emmer and Peck (1973) are presented in Table 1. [Insert Table 1 about here.] Considering that these 12 variables are among the most often used in process observation systems developed for the classroom, perhaps the most important finding for these ratings as a set is the general absence of significant correlations. Where significant coefficients were obtained, they usually were obtained in only one of the two years of the study, and many of the significant correlations obtained are in the direction opposite to that expected on the basis of available data. Student attention did show one positive correlation in each year. The positive direction of correlation was expected, although this variable might have been expected to show some more consistent and higher correlations with student learning measures. Nevertheless, the majority of coefficients were very low and statistically insignificant. Perhaps this should

not be totally surprising, however, because **Taylor (1968),** comparing three different methods of assessing student attentiveness, found that student attentiveness as rated by classroom observers does not appear to be a very valid measure. In this study, student attentiveness was measured by observer ratings, by student self-ratings of attentiveness taken following the class, and by a recall test administered the next day to discover whether or not the students could remember what happened immediately following a portion of the class that was tape recorded. The students' ability to remember what happened in class the previous day right after the segment that they heard on the tape recorder was highly correlated with their own self-ratings of their own attentiveness during that class. This supports the validity of both measures. However, neither of these two measures of student attentiveness was highly correlated with the classroom observers' ratings of student attentiveness, even though these observer ratings were highly reliable and quite valid in the sense that students rated as highly attentive gave every outward appearance of being highly attentive (looking at the speaker, appearing to be listening, etc.). Given these findings showing that rated student attentiveness appears to be unreliable as an indicator of actual student attentiveness, perhaps it is not so surprising that we did not find rated student attentiveness to be very highly correlated with student learning gains.

Most of the remaining significant correlations were negative, tending to make interpretation difficult. This problem persisted throughout the study and was not confined to this particular set of classroom observation scales. We take it as an indication that teaching is a matter of orchestrating a large number of variables which must be present to a certain minimum degree, rather than a matter of mastering a small number of crucial teaching behaviors. This

view has been stated many times before, but our data seem to provide consistent empirical validation for it. We expect that it will also show up in the forthcoming report on non-linear relationships (Brophy and Evertson, 1974b). Last year many inverted-U curvilinear relationships appeared, and many of the variables which tended to correlate positively in the linear analyses showed curvilinear relationships indicating that the process variable was positively correlated with the product variable only up to a point, after which the relationship flattened out. We have every reason to expect that similar relationships will appear typically in the curvilinear data for the second year.

Task orientation, high level of questions and explanations, teacher clarity, and teacher enthusiasm showed few significant correlations, and those which did appear were mixed or in the "wrong" direction. These are the first of a large number of findings which fail to confirm the variables which major reviews of previous process-product research (Dunkin and Biddle, 1974; Rosenshine and Furst, 1973) found to be consistently correlated with student learning gain criteria. Our data could be taken as contradicting earlier work, although we prefer an alternate hypothesis based upon consideration of the grade level of students involved in various studies. Most of the studies supporting the importance of a high level of classroom discourse, frequent verbal interaction, and teacher clarity and enthusiasm have been done at higher grade levels, often secondary or college classrooms. There appear to be several reasons why such variables should be more important at higher levels than they would be at the elementary grades. First, the children in the early elementary grades are still primarily learning the tool skills of reading, writing, and arithmetic, and these skills appear to be best learned through instruction, practice, and

feedback sequences rather than through verbal discussion. Had we been studying at higher grade levels, where verbal discussion is both more frequent and more appropriate as a vehicle for instruction, we might have found different results. Also, consideration of the childrens' developmental level leads to the conclusion that instruction through verbal interaction should be less important and less effective with young children. Children in these grades, especially in the lower class schools, have not yet reached the stage of concrete operational thinking, and thus their learning is still heavily action oriented and their ability to profit from purely verbal instructions is still quite limited.

The frequency of teacher lecturing and the frequency of pupil-to-pupil interactions showed mixed patterns of correlations and the measure of convergent vs. divergent questioning showed no significant correlations. This is the first of a long series of findings showing that the variables stressed by Flanders and others who favor methods of indirect teaching are not well supported by the data of this study. Again, we believe that the grade level involved is important here. Studies supporting indirect teaching methods have been done primarily at older grade levels and tend to assume that verbal discussion is the primary mode of instruction. As mentioned above, given the ages of children and the kinds of learning going on at these grade levels, indirect teaching appears to be inappropriate, especially for low SES children.

Perhaps the most surprising set of negative data in Table 1 are the correlations for positive and negative affect. Positive affect showed only a single positive significant correlation for low SES, and two <u>negative</u> significant correlations for high SES. Negative affect showed no significant correlations in either direction

in either year. These are the first of many measures of teacher affective behavior that show similar results. First, it appears that teacher verbal evaluations are relatively unimportant, compared to other variables and compared to the stress laid upon them in most textbooks. Second, there is a contrasting pattern on these variables for high vs. low SES schools. Warm and encouraging teacher behavior is positively associated with learning gains in low SES schools (but not very strongly), while in high SES schools it tends to correlate negatively, and negativistic behavior tends to correlate positively with student learning gains. It appears that the teachers who got the greatest learning gains in the high SES schools were teachers with high demands for student learning and little tolerance for student failure to meet these expectations.

The only variable in this set of ratings that showed the expected pattern of data was the measure of student withdrawal and passivity, although even here significant correlations appeared only in the second year and only for high SES schools. In any case, student withdrawal and passivity was significantly negatively correlated with student learning gains, as was expected.

Taken as a set, the classroom observation scales measuring variables commonly used in classroom observation systems were disappointing in the frequency and direction of significant correlations obtained. The data suggest that the typical textbook wisdom based on studies done largely at higher grade levels is not appropriate for teachers of young children, particularly teachers of low SES children.

Another set of high inference process measures was obtained by having classroom observers check whether or not teachers use particular methods of handling problems. These checklist variables are shown in Table 2. [Insert Table 2 about here.]

Few of the variables in this set reached statistical significance, partially because of missing data and general low frequency in many of the categories. The first variable concerned the teacher's method of handling catchup work when a child had missed school. Here the only significant correlations obtained were for the variable "teacher explains work and has child do part of it" for year 2, and the findings were mixed in direction. This teacher method was negatively correlated with student learning gains in low SES schools but positively correlated in high SES schools. The high SES data make sense; given the alternatives, this method seems to be the one most likely to insure that the child masters the missed material and catches up with his classmates. The low SES data are difficult to interpret because none of the alternative methods showed positive correlations. It may be that this particular problem is not especially important at low SES schools at these grade levels. If this is so, it is probably because things move so slowly that catching up on missed work is not a major problem for teachers working in these schools. This is just a guess, however; the pattern of correlations makes it very difficult to interpret the low SES data meaningfully at all.

The next checklist variable concerns the teacher's rules concerning free movement around the classroom by the children. Here the data indicate that reasonable flexibility is positively associated with learning gains. Teachers who **required** the children to get permission at all times before leaving their seats tended to produce low learning gains, while teachers who had a rule to the effect that children could move at their will without permission as long as they moved quietly (or something to this effect) tended to get higher learning gains, particularly in high SES schools.

The next section deals with punishment methods used by the teacher in situations where punishment was necessary. As expected, the data show that teachers who used milder and more informative types of punishment were more effective then teachers who used more punitive and uninformative methods. Thus, keeping the child after school, sending notes home to the parents, and discussing the incident with the child were all positively correlated with learning gains. In contrast, spanking and scolding showed negative correlations, although scolding did have a single positive correlation in high SES. Use of peer pressure also showed a single positive correlation in high SES. Isolation and removal, two techniques frequently recommended by behavior modification theorists, failed to show any positive correlations and generally tended to have negative patterns. This may indicate that these punishment techniques are not effective in real classrooms despite laboratory findings, although we did not measure the effectiveness with which teachers applied punishment, so that it is possible that teachers who used isolation and/or removal from the classroom were not doing so in effective ways. In any case, the data do not support isolation or removal as punishment techniques. In general, the data in this section are more consonant with the child rearing data concerning home discipline techniques than they are with the behavior modification literature.

The next section concerns rewards used by the teacher, and this time some support for behavior modification is revealed, although the more general pattern of findings for the study as a whole suggests that praise and reward were not particularly important. In any case, within this set, positive associations were obtained for the methods of giving the children special priveleges and for using symbols such as smiling faces or stars. In contrast, negative correlations

appeared for the methods of having classmates clap or cheer and for "rewarding" students by assigning them jobs or monitor duties. These data fit together nicely if we assume that neither of the latter were perceived as rewards by the students and thus were not effective even if the teachers tried to present them as rewards.

The next set of variables concern observer ratings of the appropriateness of the assignments that the teachers gave the children. Correlations were generally as expected, although "boring, repetitive, monotonous assignments" showed no significant relationships. However, assignments rated as too short or easy or as too difficult were negatively associated with learning gains, and the rating of "no inappropriate assignments" was positively associated with learning gains. An interesting SES difference appeared for the rating of assignments as being too difficult vs. too easy. Apparently it is a greater problem in high SES schools to have assignments that are too easy, while it is a greater problem in low SES schools to have assignments that are too difficult. This makes sense, given what is known about SES differences and the importance of matching assignments to present student abilities and knowledge.

Teachers who were rated as tending to continue activities too long to the point of boring the children tended to get relatively poor student learning gains, at least in high SES schools. This is the first of several findings supporting the ideas of Kounin (1970). Classroom management variables consistently appeared to be among the most important in all those included in our study in terms of the consistency and strength of relationships with student learning gains, and Kounin's point that the secret to successful classroom management is problem prevention through keeping students actively engaged in productive work rather than knowing how to deal with problems once they get started appears to be well supported.

The next section concerns distractions, particularly the question of what the students do when they are not doing work that they are supposed to be working on. The data in this section are confusing and difficult to interpret, primarily because the great majority of significant correlations are negative. Thus, while it makes sense that such activities as day-dreaming, disrupting others, or repeatedly getting supplies would correlate negatively with learning gains, it is unclear why watching the reading group or asking for help should correlate negatively or why play should correlate positively. The most likely explanation for these confusing findings is probably the work of Kounin. He found that attempts to identify and measure contrasting methods of dealing with misbehavior and other classroom problems were successful, but that measures based on these attempts did not correlate meaningfully with teacher success in classroom management. Meanwhile, measures of teacher success in problem prevention did correlate highly and consistently with success in classroom management. A similar phenomenon was probably operating here, in that the variables in the present set all concern situations in which a problem already exists (i.e., the child has stopped working on his work and is wasting time or engaging in some kind of disruptive or disapproved activity). Measures of student attitudes toward the teacher showed weak but consistent correlations, indicating that students who were positively disposed towards the teacher and/or towards learning made greater gains than those who were not. Specifically, students rated as concentrating or seeking help when having trouble with work tended to make greater learning gains, while learning gains were lower in classrooms where students were rated as likely to copy from their neighbors when they were having trouble.

The next two sets of variables concern materials available in the classroom for use by the children during their free time. One set concerns the sheer

availability of the materials, independent of their use, while the second set concerns observations of children actually using these materials. The patterns of correlations in both sets of data are extremely confusing, with mixed results and failures to replicate across years. We suspect that the validity of these two sets of ratings was undermined by changes in physical settings and materials provided to teachers that were going on in the schools during the two years of study. During these years the school district was gradually implementing more flexible curriculum materials, the use of learning centers and other student controlled individualized learning devices, and a movement from a more traditional physical set-up to a more flexible use of classroom space. Since the study took place at a time when the number and variety of free play materials available to children in classrooms were in a state of transition, it is not surprising that measures of the availability and use of particular kinds of free play opportunities failed to show meaningful correlations. However, teachers' self-report of flexibility in adapting to these changes did appear to be related to student learning gains (Evertson and Brophy, 1974).

The next variable concerned the use of peer tutoring by the teachers, which in this case referred to having children tutored by children in the same classroom (as opposed to having children tutored by older children). Contrary to expectations, the only significant correlations here were <u>negative</u>. However, these appeared only for low SES schools, and they fit together with data from other places suggesting that, at these young grade levels at least, children in general and children in low SES schools in particular need instruction from the teacher as opposed to instruction from peers or self instruction.

The next section was a rating of the degree to which the teacher assigned homework in addition to seatwork. The general pattern here was negative correlations in low SES schools and positive ones in high SES schools, although there were some exceptions and only a single positive correlation in high SES schools reached statistical significance. This fits in with other data from high SES schools suggesting that, as expected, learning gains were related to the degree to which emphasis was placed on learning by the teachers.

The final variable in this set concerns rating the teacher as likely to underreact to control and discipline problems, so that such problems sometimes go unresolved or get worse. The correlations here were generally negative, as expected, although the data were sparse and the only significant coefficient was a negative one in the first year for low SES schools. This fits in with Kounin's(1970) statement that teachers need to be "with-it" in staying attuned to what is going on in the classroom and nipping potentially serious problems in the bud before they become serious problems. The fact that the correlation was significant in low SES rather than high SES also fits in with data from several other aspects of the study indicating that maintenance of firm classroom control is particularly important in low SES schools.

A third set of high inference data was obtained using 41 rating scales covering a variety of aspects of teaching. These data are presented in Table 3. [Insert Table 3 about here.] As was the case with the classroom observation scales in Table 1, these high inference rating scales were relatively surprising in the lack of significant correlations obtained when they had been expected. For example, affectionateness, solidarity with the class, teacher admittance of

her own mistakes, bending down close to the child to get to his level, speaking to individuals rather than to the whole class, using advance organizers, giving complete and detailed instructions, using a democratic vs. an authoritarian leadership style, teacher confidence and self-assurance, teacher politeness with the children, teacher encouragement of students, explanation of rules, teacher being well prepared and well organized, teacher rated as having a busy, cluttered classroom, students rated as being obedient and compliant, and teacher rated as giving overly explicit directions all failed to show any significant correlations with the criteria. In the data for the second year, and few significant correlations in the data for the first year. Most observers would agree that most of these variables are important for teaching, but they proved to be relatively unrelated to student learning gains in our study. Many of these non-significant correlations no doubt resulted from the fact that we were studying at the second and third grades, before the children were old enough for some of these variables to become relevant and important in the instructional process. Others, however, such as teacher organization and student compliance and obedience, are clearly surprising.

Among the significant correlations there also were several surprises in addition to some confirmation of expected findings. Variables which correlated positively with student learning gains included: allowing students choice in assignments (there was a significant negative correlation for low SES); recognizing good thinking on the part of the students even when it did not lead to the correct answer (low SES only); expecting students to care for their needs without getting specific permission to do something (high SES only; there was a significant

negative correlation for low SES); teacher concern with substantive content rather than with form of responses; teacher stress on factual realism and avoidance of childish idealism (low SES only); teacher credibility with the students (high SES only); teacher showmanship (low SES only); teacher gets attention before starting into an announcement or lesson; teacher regularly monitors the class and knows what is going on (especially in low SES); teacher has smooth and efficient transitions and wastes little time (low SES only); and teacher has well established routines to minimize interruptions for housekeeping matters (low SES only).

Note that most of these positive correlations are for aspects of classroom management which have been stressed by Kounin, particularly the kinds of teacher behavior that prevents problems before they get started and that keeps students engaged in their work. Other correlations involved such generally agreed upon and positive teacher behavior as encouragement and showmanship, although the correlations were sparse and weak compared to what was expected.

Many of the surprises were in the significant <u>negative</u> correlations, especially those for high SES schools. Variables which correlated negatively with student learning gains in high SES schools included: patience and supportive behavior when giving corrections; accepting students ideas and/or integrating them into the discussion; going to the students' seats to check work rather than having the students come up to the teacher's desk; student eagerness to respond to questions; teacher patience in waiting for students to respond if they do not respond promptly; room rated as attractive; and room rated as uncrowded (this was a reversal of last year's findings; its meaning remains unclear).

Many of these negative correlations reconfirm the point made above that variables coming out of the indirect teaching tradition and stressed in many contemporary textbooks simply do not correlate positively, and sometimes correlate negatively, with student learning gains. However, we stress again that we believe that this is due to the grade level at which we were studying and do not mean to imply that indirect teaching would be inappropriate for older students who have mastered tool skills taught in the early grades.

Several of the negative correlations for high SES schools imply negative teacher affect. This appears to be partially true, although it also appears to be restricted to the area of achievement. That is, both the data and the comments of our classroom observers suggest that the teachers who got the highest gains in the high SES schools are teachers with extremely high and somewhat inflexible expectations and great determination to teach the students, combined with short patience for students who fail to meet those expectations. These teachers were not <u>generally</u> negative or punitive (for example, there was very little criticism or other negative teacher behavior of any kind observed in these teachers), but in the more narrow area of achievement-related interchanges, they tended to express their disappointment in the form of criticism of the students when students failed to perform up to teacher expectations. Other data suggest that the teachers were positive towards the students in more general ways and were concerned about student social and emotional development as well as academic development, but it does appear to be true that the teachers who got the greatest student learning gains in high SES schools were particularly concerned with achievement gains, perhaps overly so given the nature of the students they were

teaching. This did not appear to be true of the more successful teachers in the low SES schools.

A fourth set of high inference data was gathered by having classroom observers estimate the percentage of time that teachers used various methods of dealing with different situations. These data are presented in Table 4. [Insert Table 4 about here.] The first variable concerned time utilization. This included both the percentage of the available time that was used by the teacher for instruction (as opposed to non-instructional purposes) as well as proportions of the instructional time which were devoted to various curriculum areas. Most of these time utilization measures yielded confusing data which failed to replicate across years. However, as expected, time spent in language arts was negatively correlated with arithmetic learning gains and time spent in math was positively correlated with math gains. Even here, however, there were some contradictions and expections. In general, the time utilization data are confusing.

The next set of measures concern methods that the teachers used to gain attention at the beginning of lessons or when they were about to make an announcement. Most of these correlations were not significant, although shouting, becoming angry, and scolding the class were negatively correlated with student learning gains. The estimated percentage of students paying attention showed only a single positive correlation with learning gains. This is similar to the finding mentioned above, showing that student attention ratings are correlated in the right direction but very weakly, probably because observed student attention is not a very valid measure of actual student attention.

The next measure concerned what the teacher does when a child does not understand how to do his seatwork and comes to her for help. Here the data showed SES differences. In high SES schools, greater gains were made when the teacher delayed the child and explained later at a more convenient time. There were also positive correlations in high SES schools for encouraging the child without actually helping him, and for scolding the child for failing to understand. Here again is the pattern for teachers who got the highest gains in high SES schools to be very demanding in their interactions with the children. In contrast, the teachers who got the highest gains in low SES schools tended to give the students more immediate feedback upon request rather than delay them until a more convenient time, tended to give the students help themselves personally rather than refer them to a fellow student, and tended to give actual help rather than mere encouragement without help. Thus, in contrast to the high SES schools where the students were challenged to work things out on their own, in low SES schools, the more successful teachers were quite willing to give the students help on request, and this behavior appeared to facilitate student learning. In many ways, this particular set of measures typifies one of the more important differences between low and high SES schools in the kinds of teacher behavior associated with maximal student learning gains.

The final variable in this set concerns what the teacher did when the child was stuck while reading in the reading group. Correlations were mostly low and non-significant for high SES schools, except that the method of having the child start the sentence or paragraph over was correlated positively with student learning gain. Giving context clues and asking another child to supply the word

were both strongly negatively correlated in the first year, but neither variable showed significant correlations the second year. In contrast to the data for high SES schools, the data for low SES schools suggest that giving the child a phonics clue was facilitative, while giving him a clue unrelated to either sound or meaning (such as "It's one of our new words.") was negatively associated with student learning. As expected, the data taken together suggest that phonics clues are particularly important for low SES children, although the findings are not as strong and consistent as might have been predicted.

Lesson Presentation and Teaching Methods

Data on aspects of lesson presentation and teaching methods are presented in Table 5. [Insert Table 5 about here.] These data were collected in low inference fashion the first year on a subsample of 10 teachers (five of the most consistently successful and five of the most consistently unsuccessful teachers). The second year these same variables were measured but in high inference fashion with five-point scale ratings made on all 28 teachers included in year 2. Because data were collected on only 10 teachers in year 1, Table 5 contains correlation coefficients only for the total group in year 1. In contrast, correlations are provided for the total group and for both SES subgroups in year 2, when data were available on all 28 teachers. These data refer to teacher behavior during formal lesson activities, as opposed to the previous variables which mostly refer to teacher behavior in general.

The first ten variables concern the time that teachers devoted to various aspects of lesson presentation. The use of advanced organizers proved to be uncorrelated with student learning, confirming the finding from Table 3. Other

variables showed positive correlations in high SES for review of old material, practice of new material, and, in one case, eliciting student self-evaluation. Some degree of positive correlations for review of old material was expected on the theory that children need to master material to the point of over learning, although it would be expected that this variable would be more important in low SES than in high SES, which was not the case. The data on practice of new material, coupled with the negative correlations last year and the lack of significant correlations in high SES this year for presentation of new material, suggest that opportunities to practice new skills are more important for child learning than listening to teacher presentations. In addition to opportunities to practice, opportunities to get feedback, both from the teacher and through teacher stimulated self-evaluation, were also important for high SES children. Summarizing reviews were also important (although there were negative correlations, for unknown reasons, in low SES), but instructions for follow-up activities and independent activities were not, and the frequency and length of dead spots during lessons also were uncorrelated with student learning gains. The latter was one of the few places where a prediction based on the findings of Kounin was not borne out, although it was last year. Taken together, the data for high SES schools in this data set hang together rather well, suggesting that opportunities to practice both new and old material and to get feedback and to evaluate one's own work are all important.

In contrast to the high SES data, the data for low SES schools in this particular set make little sense. Few correlations are significant, and these tend to be negative and confusing. Presentation of new material, summarizing review, and teacher afforded evaluation of student work all showed negative

correlations with learning gains, while nothing showed positive correlations. This suggests that either we were not measuring those aspects of lesson presentation that were important in low SES schools, or that lesson presentation itself was relatively unimportant in low SES schools compared to activities occurring outside of lessons. Perhaps the analyses of the non-linear process-product relationships (Brophy and Evertson, 1974b) will shed some light on this problem.

The next eight categories concern methods of teaching. Last year, teacher demonstration (as opposed to mere lecture without demonstration) and silent reading showed positive correlations, while drill showed negative correlations. Student discussion and oral reading showed no significant correlations. The data for this year again showed positive correlations for teacher demonstration and no significant correlations for teacher lecture, positive correlations (but much weaker) for silent reading, and absence of correlations again for oral reading. The discussion data showed negative correlations for focused discussion and student learning gains in low SES schools, and negative correlations between unfocused discussion and student learning gains in high SES schools. Drill, which had been significantly negatively correlated last year, showed no significant correlations this year. In contrast, problem solving activities, which had showed no significant correlations last year, showed several significant positive correlations in both low and high SES groups this year.

Taken together, these data again point out the importance of practice and application as learning vehicles for children at this age level, in contrast to lecture and discussion which may be appropriate and successful for older children but which apparently are not for children at these early grades.

The next five variables concern the teachers' use of standardized vs. supplementary teaching materials. Last year's data showed that supplementing standardized materials with games and activities was positively associated with student learning gains, while teacher created materials, audio-visual aids, and learning centers were all uncorrelated with learning gains. This year's data were more complex. The use of standardized materials alone was negatively correlated with learning gains for low SES but positively for high SES; the use of teacher created materials was positively correlated but only for high SES; and the use of audio-visual aids was positively correlated but only for low SES math gains. The low SES data suggest that the standardized math materials are inappropriate for the children and the more successful teachers are so in part because they use audio-visual aids to supplement the curriculum package. The high SES data are somewhat confusing, suggesting as they do that the teachers who get the highest gains are the ones who stick with standardized and teacher created materials, avoiding audio-visual aids, games and activities, and learning centers. Here again, these confusing data may well be a function of the fact that the school system was in transition with regard to the introduction of audio-visual aids, games and activities, and learning centers during the two years of the study, particularly the second year. Thus, the apparently confusing data for high SES schools are probably due in part to this change. Also, given that the student learning criteria are from standardized tests, and that the standardized curriculum materials and the teacher created materials, in contrast to the other three types of materials, are more likely to foster learning gains on standardized tests, the high SES data are perhaps not surprising after all. They may simply

mean that the teachers in the high SES schools who were most successful were those who continued to insure that the children learned the kinds of things that are tested on standardized tests as their first priority, viewing audio-visual aids, games, and learning centers as frills or reward devices rather than as teaching devices. This question will be addressed more directly in the report on the interview and questionnaire data (Evertson and Brophy, 1974).

The next three variables deal with the degree of individualization that the teacher uses in presenting materials to the children during lessons. Last year's data suggested that the most successful teachers were those who worked with individuals when given feedback in the group, as opposed to dealing with pairs of children or to the group as a whole. This finding was replicated the second year, although not as strongly and in a somewhat different pattern of correlations. In any case, the data suggest that it is important for teachers to monitor the individual progress of children during lessons and to provide individual feedback, as opposed to directing instructions to the group as a whole and failing to monitor individuals.

The final variable on this table concerns the use of non-patterned turns in group lessons. Contrary to expectations, it was found last year and to a lesser extent this year that this variable was <u>negatively</u> correlated with student learning gains. In other words, the more successful teachers tended to use patterned turns, calling on children in some obvious manner that allowed the children to know in advance when their turn would come up. Although there is a division of opinion on this matter, with some persons suggesting patterned turns on the grounds that it will reduce child anxiety and increase attention to the reading of other children, in contrast to the opinion that teachers should be unpredictable in

order to hold children accountable for being called on at any time, most writers present the latter view. However, in both years of our study teachers who used patterned turns got better results than teachers who were unpredictable or random in their pattern of calling on students to read or recite. It may be that anxiety induced through unpredictability sufficiently interferes with student learning to outweigh whatever advantages in accountability that such unpredictability might bring with it. Another interpretation, which is merely different from rather than contradictory to the first, is that using patterned turns insures that everyone will get equal or roughly equal proportions of response opportunities in the group, whereas the absence of patterned turns indicates that the teacher is calling on students according to her idiosyncratic criteria, and this possibility opens the way for self-fulfilling prophecy effects and other kinds of problems that can occur when a child is simply left out of a lesson or discussion.

Low Inference Measures

Data from the low inference system, the expansion of the Dyadic Interaction Observation System (Brophy and Good, 1970), are presented in Table 6. [Insert Table 6 about here.] The first set of variables deal with the question of how students get response opportunities (teacher pre-selection vs. teacher calling on non-volunteers after asking the question vs. teacher calling on volunteers vs. student calling out answer before the teacher gets a chance to call on anyone). These data generally failed to hang together across the two years of study. Pre-selection of students for questioning was negatively correlated with leraning gains in high SES schools in year 1, but in year 2 the coefficients were positive. Meanwhile, there was a single negative correlation in year 2 for low SES schools. Negative correlations had been expected on the general logic that teacher unpredictability would hold the students more accountable, but another prediction based on this same premise,

namely that non-patterned turns would be preferable to patterned turns, was disconfirmed. Thus, here again the data failed to provide support for the idea that teachers should go out of their way to be unpredictable in order to keep students accountable for making responses at any time.

This can be seen most clearly in the high SES school data, where calling on volunteers and where pre-selecting the respondent both correlated positively with student learning gains, whereas calling on non-volunteers showed no significant correlations either year. These data suggest that the anxiety factor may be an important one in determining the value of response opportunities to the student. Perhaps calling on students may keep them accountable but may make some of them sufficiently anxious that the learning value of the response opportunity is outweighed by the anxiety or other negative affect which an unexpected and/or undesired response opportunity may create. The data for low SES schools are less clear-cut and more confusing. Pre-selecting the student showed a single negative correlation the second year, calling on non-volunteers showed no significant correlations, and calling on volunteers showed four significant negative correlations the first year. Taken together, these data provide somewhat more support for the idea of keeping students accountable by calling on them randomly or non-predictably, but the data are weaker than those for high SES.

The data for both years showed positive correlations for low SES and negative correlations for high SES for the variable "student calls out answers." The negative correlations in high SES were expected, since frequent calling out by students would seem to indicate over-competitiveness and a certain degree of

poor classroom management on the part of the teacher. However, the two coefficients which reached statistical significance in low SES schools were both positive, indicating that student call-outs were positively associated with learning gains in these schools. Since call-out rates in general were low, particularly in low SES schools, the positive correlations here may reflect better student motivation and/or more appropriate levels of questioning in the classrooms of teachers who obtained relatively high student learning gains. In any case, it seems unlikely that call-outs in low SES schools are an indicant of poor classroom control, because data from other aspects of the study suggest that classroom management is especially important in low SES schools, with the more successful classroom managers being more successful in obtaining student learning gains. Thus, it seems reasonable to conclude that student call outs in low SES schools represent something positive rather than an aspect of poor management or control techniques on the part of the teacher.

The next set of variables in Table 6 concerns the difficulty level of questions. Process questions are the most difficult and choice questions the least difficult, on the average, compared to product or factual questions which represent the majority of questions asked at these grade levels. The data for question difficulty show mixed and conflicting findings, both across years and within the total sample and both SES groups. These data probably reflect the fact mentioned above that at this grade level the vast majority of questions are factual product questions requiring one word or short responses, and the variable of difficulty level of the question probably is not yet important. Had the study been conducted at higher grade levels, these variables might have yielded more consistent and interpretable data.

The next section deals with the quality of the childrens' answers. The children were scored for answering correctly, part correctly, incorrectly, saying "I don't know, " or making no response at all. The data for correct answer rates show that high percentages of correct answers correlate positively with learning gains in low SES schools, but negatively in high SES schools. This is another manifestation of the general finding that low SES children need to be taught in smaller chunks and with greater redundancy compared to high SES children who appear to make the greatest gains when challenged and pushed. It should be noted at this point that last year's non-linear analyses (Brophy and Evertson, 1973b) indicated that the quality of the childrens' answers was curvilinearly related to achievement gains in an inverted-U fashion for both SES groups. That is, there was an optimal level of question difficulty (as inferred from percentages of correct answers) in the two SES groups, with the optimum being at about 80% correct for low SES and at about 70% for high SES. The general pattern of findings in the linear data from this year's analyses suggest that similar curvilinear relationships will be found in this year's non-linear analyses (Brophy and Evertson, 1974b).

The remaining data in this set fit with the general interpretation already given. The data for wrong answers mirror the data for correct answers, indicating that wrong answers are positively associated with learning gains in high SES schools and negatively in low SES schools. The data for part correct answers showed mixed and conflicting patterns of correlation, indicating that this variable should be broken down more finely into responses which are mostly correct vs. responses which are in some part correct but primarily wrong. The

correlations involving this variable sometimes resemble those for correct answers and sometimes resemble those for incorrect answers, suggesting that the "part correct" designation is an overly broad one.

Interesting data appeared in relation to situations where the child had no idea concerning the answer. As expected, teachers tended to obtain relatively high gains when their children tended to say "I don't know" rather than to remain silent and make no response at all. This was especially true in low SES schools, again emphasizing the importance of the teacher getting a response from the student in a low SES school, even if that response is "I don't know." In contrast to low SES schools, where it was important for the teacher to stay with the original respondent and get some kind of a response, in high SES schools it seems more important to get the answer, and relatively unimportant as to whether the answer was obtained from the original respondent or from some other student.

Sections D through J of Table 6 all concern teacher reactions or other events following responses by the students. Some of these data can be discussed in general across different kinds of situations, while others need to be discussed separately depending upon the quality of student answers.

Among the variables showing generally consistent patterns of correlation are teacher praise of correct answers and teacher criticism of incorrect answers (criticism here does refer to criticism of the quality of the child response, and not to criticism of behavior such as calling out answers). Teacher praise was coded when it occurred following either correct or part correct answers. As noted in the table, teacher praise following part correct answers was too rare to allow data analyses, even though this is one place where praise might have

been most effective had the teachers used it sufficiently. In part, the problem is simply a reflection of the fact that part correct answers were relatively rare in their own right, but it is also true that praise following part correct answers was very rare, and the teachers in general were missing an opportunity here to provide encouragement for children in situations when they might have most benefitted from and appreciated it. Teacher praise to correct answers shows the same pattern noted earlier for praise: all but one correlation failed to reach statistical significance, and the one that did was a negative one. Here again is evidence indicating that praise is neither as important nor as facilitative for student learning as the textbooks and experimental work on it would suggest. In this regard, however, it should be borne in mind that we did not measure the effectiveness with which teachers praised (making praise contingent upon correct responses; specifying in detail the behavior being praised), so it is possible that the absence of positive correlations reflects inability of the teachers to praise appropriately rather than inappropriateness of praise as a teaching technique. In any case, the data across both years are quite clear in showing that teacher verbal praise in general is not a very important variable.

Unexpectedly, the data for teacher criticism of the student's answer revealed generally positive correlations, and all those which reached statistical significance were positive. Note that all of the latter are for high SES schools only; in general criticism in low SES schools was too rare to allow meaningful statistical analysis and when it did appear it tended to be negatively (but not significantly) associated with learning gains. This fits in with the pattern mentioned earlier that the most successful teachers working in low SES schools

tended to be patient and encouraging with the students, while the most successful teachers in high SES schools tended to be demanding and somewhat critical when student performance failed to measure up to expectation. It should also be noted, as mentioned earlier, that the hypercritical behavior of the more successful teachers in high SES schools was pretty much restricted to the area of academic work and answers to academic questions; it was not a more general negativistic personality pattern or general hypercritical attitude toward the children.

The data on various methods of responding to the student with feedback or seeing that he got feedback from someone else generally suggested that provision of process feedback by the teacher (giving detailed explanations of how to arrive at the answer) was positively associated with learning gains, as expected. There were a few exceptions to this general trend, however, particularly in the section on process feedback following incorrect answers by students.

Teacher failure to give feedback showed a mixed pattern of correlations when a generally negative pattern was expected. However, perhaps the more important finding here was that teacher failure to give feedback was quite rare, so that the coefficients which appear for this variable are based on very low N's. Had teacher failure to give feedback been more frequent, the expected negative correlations between this teacher behavior and student learning gains might have appeared.

The remaining data are somewhat mixed and often based on low N's, but in general they suggest that when a child did not know the answer, it was better to give him the answer (especially in low SES) or call on another child to

supply the answer (especially in high SES) rather than attempt to get the answer out of him by repeating the question or rephrasing it. When the teacher did choose to stick with the original respondent and attempt to elicit an improved response, the expected pattern emerged suggesting that it was better for the teacher to provide a clue or a helpful rephrasing of the question rather than simply repeating it. The data from both years suggest that simply repeating the question when a child has been unable to respond in the first place amounts to "pointless pumping," since given the nature of the questions at this grade level it appears that in most cases the questions deal with matters that the child either does or does not know, so that he is unlikely to come up with the answer at all if he does not come up with it fairly quickly. These process-product correlations bear out the statements of the teachers concerning what to do in these situations (Evertson and Brophy, 1974).

The SES difference on the matter of giving the feedback oneself vs. calling on another child to provide the feedback is further confirmation of the point discussed earlier that it is important for low SES schools for the teacher to obtain a response from the original respondent, even if that response is "I don't know." In contrast, in high SES schools it seems less important to do this and more important to get the answer and move on with the lesson.

The variable "another student calls out the answer" showed the expected negative pattern of correlations, although this variable was also infrequent, indicating that teachers in general were doing a good job of insisting that students allow their fellow students a chance to respond without calling out answers before they could say anything. Correlations were especially strongly

negative when student made no response, indicating that teachers who allowed an overly competitive atmosphere to develop in which fellow students would quickly call out an answer if the original respondent was not able to do so himself quickly enough tended to be less successful in promoting student learning gains. Note that an SES difference appeared on this variable similar to the SES difference on student callouts of response opportunities in the first place discussed earlier. The negative correlations were primarily in high SES schools, and a few significant positive correlations appeared in low SES schools for students calling out the answers when the original respondent failed to make a response, just as a few positive correlations appeared for the variable of students calling out answers before the teacher had a chance to indicate a respondent in low SES schools. This again suggests a difference in classroom atmosphere and competitiveness in the two kinds of schools. The data from high SES schools suggest that over-competitiveness was a danger and that it was important for teachers to insist that peers remain quiet and give the respondent a chance to think and make a response. However, if he was unable to make a response it seemed to be optimal for the teacher to then call on someone else, but it was important that the teacher call on someone else and retain control of the situation, as opposed to allowing someone else to call out the answer.

The data for low SES schools contrast with this pattern sharply. Here the teacher's primary task was to get a response from the original respondent if at all possible, even if the response was "I don't know." However, callouts by other students tended to correlate positively rather than negatively with student learning gains, suggesting that student callouts were not a frequent problem

in low SES schools, and that the classroom atmosphere probably did not involve problems of over-competitiveness and tendencies to jump in with responses if the original respondent did not answer quickly. In contrast to high SES schools, where it was important for the teacher to insist that everyone give the original respondent a chance to answer, and also important for the teacher to retain control by then calling on someone else if the original respondent couldn't answer, in low SES schools it seemed important for the teacher to stay with the original respondent and get an answer if possible, but it did not seem harmful and to some degree it seemed to be helpful if someone did call out a response. Thus, in low SES schools, in situations where the original respondent was silent, it was less important for the teacher to retain control by making sure that she called on whoever got to answer. This in turn appears to be due to a difference in competitiveness and eagerness to respond in the two types of schools.

Taken together,the data on teacher feedback to student responses confirms several expectations and disconfirms several others. Among the expectations generally confirmed were the suggestion that it is better to stick with the child than to allow others to call out an answer, that it is better for the teacher to give feedback herself rather than call on someone else, that it is good to give process feedback to a child who doesn't know the answer rather than simply give him the answer without any explanation, and that, if the teacher does elect to stay with the original respondent and try to get an improved response from him, it is better if she helps him by giving a clue or rephrasing the question than if she simply repeats the original question without giving him additional help. However, even some of these hypotheses were not supported as strongly or unambiguously as expected. Again, this is probably a function of the grade level

of the children. Most of the questions asked at this level are of the type that one either does or doesn't know the answer to, so that such teacher behavior as sticking with the original respondent and attempting to elicit improved response, which are probably important at higher levels, proved to be relatively unimportant in this sample.

The major negative or unexpected findings concerned praise, criticism, and teacher failure to give feedback. The praise and criticism data have already been discussed several times; the main point being that praise failed to show expected positive correlations and that criticism tended to correlate positively rather than negatively, although this was confined to high SES schools. The variable teacher failure to give feedback failed to show the consistently strong negative correlations that were expected for it, although this appeared to be due to its infrequency of occurrence rather than to the nature of the hypothesis. That is, what little data there are do suggest that teacher failure to give feedback to a student is inappropriate teacher behavior, but this behavior did not appear very often in our study and thus the data were not frequent enough to allow this negative relationship to show up very clearly.

The next section deals with verbal response opportunities over total teaching time. This is a measure of the degree to which the teacher spends teaching time in lectures, reading groups, and verbal discussions or lessons as opposed to individualized learning activities or seatwork. Although the findings are somewhat mixed, the significant correlations for this variable show a pattern of negative correlations in low SES schools and positive correlations in high SES schools. This fits in with the data discussed earlier concerning indirect teaching and its relationship to the nature of the curriculum and the developmental level

of the students. The students in low SES schools were still spending much time practicing tool skills, particularly writing and basic arithmetic tables, and this appeared to be appropriate for them. In contrast, students in the high SES schools had mastered most of this, and thus were beginning to move into more verbally mediated instructional modes, with more class discussion in particular. The correlational patterns reflect this; teachers in low SES schools who spent relatively more time insuring that the children got practice in fundamental tool skills were relatively more successful than teachers who spent more time in verbal activities, while in high SES schools the reverse was true.

The next section deals with student initiated questions (as opposed to student initiated comments which follow). Measures of student initiated questions showed positive associations for the frequency of such questions, whether or not they were relevant to the discussion at hand (low SES only). Measures of teacher feedback to student initiated questions for the most part failed to include enough data for meaningful analysis. However, there were significant correlations for the variables brief feedback and long feedback to relevant student initiated questions. In general, brief feedback correlated positively with student learning gains, although there was a significant negative correlation for low SES. Long feedback generally correlated negatively with student learning gains in high SES schools, but the pattern was mixed here and was even more mixed in low SES schools. Such data suggest that the categories "brief" and "long" were too general to be meaningful enough to yield interpretable data. Apparently at some times it is appropriate and helpful for the teacher to give extended feedback to a student initiated question, particularly if it

is relevant to the discussion at hand, while at other times it may be less helpful, perhaps because it involves unnecessary teacher dominance of the lesson or movement away from the focus of the lesson. In any case, the data on student initiated questions suggest that the frequency of such questions is positively associated with learning, while data on teacher feedback to these questions were ambiguous.

Data on teacher feedback to irrelevant student initiated questions were even more sparse than data on teacher feedback to relevant student initiated questions. The data for brief feedback show a positive correlation in low SES and two negative correlations in high SES. Interpretation is chancy here because of the low frequencies involved, although these data do fit in with the general pattern noted earlier to the effect that maintenance of teacher control over the flow of response opportunities seems to be especially important in high SES schools, while obtaining response from the students appears to be especially important in low SES schools. The data for not accepting irrelevant student initiated questions (i.e., informing the student that his question is irrelevant and will not be taken up at this time) showed negative correlations, although the data are sparse and only one reached significance. In any case, these data fit in with the earlier reported finding that student initiated questions appeared to be a good thing, even when they are irrelevant to the topic at hand. The present finding is probably also in part a function of the frequency of the variable; it was rare for teachers to accept and encourage irrelevant student initiated questions, and this is perhaps one reason why such behavior was positively associated with learning gains. If the teachers had been more amenable than they were to interruptions by students who wanted to ask irrelevant

questions, not accepting such questions might have correlated positively rather than negatively with student learning gains.

Variable number 98 of Table 6 concerns the proportion of total response opportunities which were initiated by students who asked a question or made a comment. As would have been expected from previous findings, this variable showed a general pattern of positive correlations in low SES and negative correlations in high SES, although there was one exception to the latter. This fits in with several findings already mentioned to the effect that it is important for the teacher to maintain control over the flow of interaction in high SES schools but important for the teacher to encourage and obtain any kind of student involvement in low SES schools.

The data on student initiated comments produced more meaningful coefficients than the data on student initiated questions, because student initiated comments were much more frequent than student initiated questions. The measure of the percentage of such comments which were relevant showed a mixed pattern, with relevant student initiated comments which occurred during the morning tending to correlate positively with learning gains and relevant student initiated comments in the afternoons and in reading groups tending to correlate negatively. This contextual difference is rather clear (and unusual given the study as a whole), but we have no explanation for it. It would make sense if the correlations for the afternoon were positive like those for the morning; this would suggest that student initiated comments are facilitative in whole group discussions but not in small group lessons. However, this was not the case, and we have no explanation for this finding, despite the replication across the two years for relevant student initiated comments during whole class interactions in the morning. It

may be that the morning data are the correct data and the other data are spurious, but there is no clearcut basis for suggesting this.

The data on the percentage of student initiated comments which were called out by the students (as opposed to being given after the teacher indicated that the student should make his comment) showed mixed findings. The general pattern was for negative correlations in low SES and positive correlations in high SES, but there were some exceptions. This SES difference runs somewhat counter to the kinds of SES differences seen earlier suggesting that close teacher control over the flow of response opportunities is more important in high SES than in low SES schools. The difference here is probably due to the types of comments being called out; it is likely that a greater percentage of student initiated comments in high SES schools were relevant and facilitative compared to the student initiated comments called out in low SES schools.

The data on praise of student initiated comments are similar to other praise data, indicating that praise is relatively unimportant and also again showing a negative correlation between praise and student learning gains. Here is more disconfirmation of the hypothesis that praise will motivate students by encouraging or rewarding them (or at least disconfirmation of the hypothesis that praise will be associated with student learning gains).

Failure to give feedback to student initiated comments showed the expected negative correlations, and several for low SES reached statistical significance for the variable failure to give feedback to relevant student initiated comments. This is another part of the general pattern to the effect that more successful low SES teachers were generally encouraging of their students and were teachers who were relatively successful in getting student involvement and student response one way or another.

Delaying student initiated comments was rare, and yielded no significant relationships. Refusing to accept student initiated comments showed mixed correlations for relevant comments and the expected positive correlations for irrelevant comments. The latter finding was expected in that refusing to accept an irrelevant student initiated comment would seem to be appropriate in most cases; however, negative rather than mixed correlations were expected for the variable "percentage of relevant student initiated comments not accepted."

The data on accepting student initiated comments ("legitimizing" the comment by paying attention to it and accepting it in the sense of agreeing with it or providing some kind of positive minimal response) showed a mixed pattern of correlations for relevant student initiated comments when a positive pattern was expected. The data for whole class interaction in the mornings and in the afternoons show positive correlations for low SES and negative ones for high SES. This fits the pattern mentioned several times previously to the effect that successful teachers in high SES schools kept control over the initiation of response opportunities while successful teachers in low SES schools were encouraging and eliciting of responses and participation. However, the data for reading groups are mixed and somewhat contradictory to the preceding. The coefficients for high SES remain negative, but the coefficients for low SES are mixed. The single negative correlation in low SES appeared in first year data which were based on low $\underline{N}$, and it may be that this correlation is spurious, but in any case, the reading group data do not fit together neatly the way the data for whole class interactions do.

The data for accepting irrelevant student initiated comments are sparser, but the one significant correlation was positive when a negative correlation was expected. Here again, the unexpected correlation occurred in the reading group. Apparently there is an important contextual difference between student initiated comments in whole class discussions vs. student initiated comments and questions which occur during the reading group. The data for total group discussions hang together with one another and with expectations based on previous research, while the data for reading groups are contradictory and confusing.

The data on integrating student initiated comments into the discussion showed only one significant positive correlation (in low SES) for relevant comments. There were no data for integration of irrelevant comments into the discussion topic. Also, there were sparse data and no significant correlations for the variable of having a student initiated comment cause a shift in the topic (i.e., the teacher not only integrates the topic into the discussion but switches the topic to the topic raised by the student's comment). The single positive correlation between integrating a relevant student initiated comment into the discussion and student learning gains fits with expectations, but the general pattern of non-significant correlations again indicates an absence of general support for use of student ideas, one of the major variables stressed by writers favoring indirect teaching. Here again, the data may well be a function of the grade level under study rather than a contradiction of previous work based primarily on higher grade levels.

The next section deals with self and opinion questions. These questions were non-academic questions that asked the child to state facts about his home

and family background, personal experiences, likes and dislikes, opinions, etc. As expected, the ratio of such questions to academic questions dealing with the curriculum showed a negative correlation pattern with student learning gains, indicating that teachers who spent a greater proportion of their time on curriculum relevant matters got more gains than teachers who did not. This finding is elaborated in the following variable that indicates that the percentage of self questions which were in some way related to the subject matter was positively associated with student learning gains. The pattern continues with the next variable, indicating that the percentage of self questions related to personal preference **was** generally negatively associated with learning gains, although there was one exception. Thus, in general, teachers who maximized **their** questioning in curriculum related areas got greater gains than teachers who spent relatively high proportions of their questions in non-curriculum related areas.

The data on opinion questions are more sparse than the data on self questions, but they show a similar pattern. In general, the proportion of opinion questions was negatively associated with learning gains, although there was an exception to this pattern.

The data for praise following student answers to opinion questions show an exception to the general pattern of insignificant or significantly negative correlations for teacher praise. Here there were two significantly positive correlations between teacher praise and student learning gains, although these were restricted to the low SES schools. This again fits with the more general pattern to the effect that the successful teachers in low SES schools were those who were encouraging of student participation and response to questions, although

it represents something of an exception to general trend in that it is one of the few places where praise showed positive correlations with learning gains.

Criticism of student answers to opinion questions was too rare for analysis, indicating appropriate teacher behavior. The same was true for teacher failure to give feedback to student opinions. The data on the percentage of student opinions followed by teacher disagreement (i.e, the teacher listens to the student's opinion but then expresses disagreement with it) interestingly showed two significant positive correlations with student learning gains. Also, the percentage of student opinions which were simply accepted showed a single significant negative correlation with student learning gains. **Taken together, these data suggest that the more successful teachers did** not merely elicit student opinions and make minimal responses, **but** listened carefully to what the student had to say and then made some kind of reasoned response, even if that response included disagreement with the student's opinion. These interpretations should be taken with caution; the data are based on low N's and are generally rather sparse.

The data on the percentage of student opinions integrated into the discussion topic indicated that **this occurred rarely,** and this variable produced no significant correlations. Here again, there is no support for the advisability of integrating student opinions into the discussion, despite the stress placed on this in many textbooks. Again too, however, it should be borne in mind that these data come from the early elementary grades and are not necessarily generalizable to higher grades.

So far the low inference data have dealt with teacher and student behavior in public response opportunity situations conducted in front of the entire group

or class and presumably for the benefit of the entire group or class. The remaining variables on the table concern private dyadic contacts in which the teacher is dealing with a single individual student concerning his work, procedural matters, or his classroom behavior. All of these contacts were not necessarily private in the sense that what the teacher said to the student might have been heard by other students, but the teacher was dealing individually with the student at the time and was not attempting to teach or make a point for the benefit of the class as a whole.

The first variable (Number 131) deals with the percentage of private contacts which were student initiated (vs. teacher initiated). As expected, the general pattern here was one of positive correlations, indicating that in general it is better if the students come to the teacher than if the teacher has to initiate contacts with the student. However, there was one negative correlation occurring in the reading groups in the second year data which stands out as an exception to the general trend. This must remain as an anomolous finding, given the general pattern of positive correlations occurring elsewhere in both years.

The next variable deals with the percentage of student initiated work contacts which resulted in the teacher praising the student. This variable yielded the most general and consistently negative correlations between praise and student learning. It suggests that although praise in general appears to be negatively associated with student learning in most contexts, it is especially inadvisable in this particular context (i.e., when the student comes to the teacher with his work seeking praise). It may be that the teachers most prone

to give praise in these situations tended to be teachers who had "pets" whom they rewarded for such behavior. It may also be that such teachers tended to give inappropriately easy assignments so that praise was dispensed more frequently because good work was done more frequently. Other interpretations, including many that are consonant with those offered above, are also possible. In any case, it seems clear that provision of praise to students who come seeking it is negatively rather than positively associated with student learning gains in both low and high SES schools.

The percentage of student work contacts which involved criticism proved to be negatively correlated with student learning gains in low SES schools but positively correlated with learning gains in high SES schools. This fits in with the general pattern that we have seen so far: successful teachers in low SES schools were encouraging and reinforcing of student efforts, while successful teachers in high SES schools were demanding and hypercritical.

The percentage of private work contacts which were student initiated showed two significantly positive correlations with student learning gains, as expected. The general implication here is that it is better if the students are motivated to come to the teacher when they want help or want to discuss their work rather than fearing the teacher or remaining aloof from her so that the teacher has to go to the students to initiate such contacts.

The measure of delay of student initiated contacts showed a mixed pattern in which both SES and context were important. Although the data appear completely confusing at first glance, the pattern which shows up in the reading group data, when compared to the patterns for the whole class interaction in the mornings

and afternoons, suggests that this variable is related to the variable of whether or not the teacher has established a system for seeing that children get help with their work when they need it. Recall that teachers who had established such a system tended to do better than teachers who had not. In general, it is the teachers who have failed to establish some kind of system to insure that they are not interrupted during reading groups who tend to get lower gains, and indeed the systems tend to be set up primarily so that the teacher can avoid being interrupted during reading groups when she is doing concentrated teaching, as opposed to other contexts in which it is easier for her to interrupt what she is doing in order to deal with the needs of a particular student. With these considerations in mind, the positive correlations between delaying student requests for help and student learning gains which occurred for this variable in reading group make sense, as do the negative correlations occurring in other contexts. The only exception is the single positive correlation in low SES for the afternoons.

These patterns are elaborated in the next set of data concerning brief and long feedback in student initiated contacts. Within the reading groups, if the teacher gave feedback at all it was appropriate to give brief feedback and inappropriate to interrupt and give long feedback, fitting in with the comments made above. Similarly, in other contexts where the teacher could more easily interrupt what she was doing, brief feedback showed positive correlations and long feedback showed mixed correlations, indicating that feedback to the student in these contexts was appropriate unless it was carried to the extreme to the point where the teacher was dealing with a single individual child to the detriment of other things that needed to be done at the same time. In general, the data in the preceding variables fit together rather well with the ideas of Kounin concerning classroom management.

The measure of the percentage of student initiated contacts which involve personal concerns showed the expected pattern of negative correlations with student learning gains. This is another indication of the general finding that learning gains were greatest when the greatest proportion of time was spent in curriculum related activities.

The percentage of student initiated requests which were granted was positively associated with learning gains, while the percentage of student initiated requests which were delayed or not granted tended to be negatively associated (although there were exceptions in each case on the latter two variables). In general, this suggests that the majority of student initiated requests were probably appropriate and that the more successful teachers were reasonable teachers who granted such requests rather than delay the student or refuse permission. This set of findings is relevant to the comments made earlier about negativism and criticism in high SES teachers being pretty much restricted to the narrow academic sphere. These and other data suggest that the successful high SES teachers were not generally negativistic towards the children, although they were hypercritical when the children failed to meet expectations.

The percentage of student initiated contacts which involved sharing personal experiences showed a single positive correlation in low SES schools. This finding is something of an exception to the general pattern that any teacher-student interactions which do not have to do with work tend to be correlated negatively with student learning gains, but on the other hand it fits in with the pattern seen in low SES schools that the more successful teachers tend to be warm and encouraging with the children.

The next measure concerns private work contacts over private work contacts plus public response opportunities. This measure indicates the degree to which the teachers spent time dealing with individual children discussing seatwork as opposed to conducting general verbal interactions. Although few correlations reached significance, the pattern suggests that private work contacts were positively associated with learning gains in low SES schools, while greater amounts of time spent in verbal activity involving the whole class were associated with learning gains in high SES schools. This point has been discussed previously.

The percentage of procedural contacts over the total number of response opportunities showed the expected negative pattern of correlations with learning gains, although there was one exception in low SES. Here again, the more time spent in curriculum related activities, the greater the learning gains, in general, but again, too, is evidence that the more successful teachers in low SES schools were warm, encouraging, and personally involved with their children.

The measure of teacher initiated work contacts over teacher initiated work contacts plus teacher initiated procedure contacts indicates the degree to which the teacher initiated contacts with students for purposes of discussing their work as opposed to asking them to run errands or complete some needed classroom management task. Unexpectedly, most of the significant correlations on this variable were negative rather than positive. Although it cannot be ascertained for certain by analyzing the data at hand, it seems likely that this surprising set of findings is due not so much to this particular variable as it is due to the relative frequency of teacher initiated vs. child initiated work contacts.

Other data suggest that the more successful teachers had more child initiated work contacts than teacher initiated contacts (i.e., when children needed help they came to the teacher; the teacher did not have to go around the room to check the children). Thus, the correlations in the present case appear to be due to the relatively poor success of teachers who had high frequencies of teacher initiated work contacts; the frequency of teacher initiated procedural contacts is probably relatively unimportant.

The percentage of teacher initiated work contacts involving praise again shows a consistent negative pattern of correlations with student learning gains. Here again is evidence that praise not only fails to correlate positively but tends to correlate negatively with student learning gains.

The percentage of teacher initiated work contacts involving mere observation tended to correlate negatively with student learning gains. In contrast, the measures for teacher initiated work contacts involving either brief or long feedback both showed mixed patterns. The data for high SES schools tended to be negative across the board, indicating that the problem was the sheer frequency of teacher initiated contacts involving work in the first place. That is, the really important variable in the high SES schools was the question of whether work contacts were initiated by the child or the teacher, as opposed to whether the teacher merely observed, gave brief feedback, or gave long feedback in work contacts which she initiated. In contrast, the data for low SES schools hang together suggesting that mere observation which does not involve provision of help was negatively associated with learning gains, but that brief contacts and long contacts, both of which involve providing students some help, tended to be positively

associated. The latter variable was more mixed than positive, indicating again that if the teacher gets too wrapped up in providing individualized feedback to a single student for too long a time, other things are likely to happen that will vitiate the gains accruing to the individual student. This again fits in with Kounin's suggestions about classroom management.

The percentage of teacher initiated contacts which involved sharing personal experiences showed positive correlations in low SES schools and negative correlations in high SES schools. This again fits the pattern noted earlier indicating that successful teachers in low SES schools were student oriented, while successful teachers in high SES schools tended to concentrate on the curriculum.

The measure of teacher initiated procedural contacts which were management requests as opposed to requests that the student do the teacher a favor tended to correlate negatively in both types of schools. This is another indication of the point made previously that teachers who had set up some kind of monitor system to take care of daily housekeeping tasks "automatically" tended to be more successful in producing student learning gains.

The measure of the teacher thanking a student following a favor request or a management request showed mixed, mostly negative results. These data fit in with the general findings for praise, as well as the general findings concerning SES differences. The few positive correlations for thanking students occurred in low SES schools, while all of the significant correlations in high SES schools were negative ones. This indicates again that the more successful low SES teachers were warmer and more student oriented, but that the more successful high SES school teachers were primarily concerned with teaching the curriculum and less

concerned with the personal needs of their students. They not only were less likely to praise and more likely to criticize their students; they were also less likely to thank them for doing things which they asked them to do.

The next three variables involve combining praise and criticism data and behavioral warnings and criticism data across different contexts. The data on academic praise and criticism bear out the general pattern noted all along, although there are some exceptions. In general, the more successful teachers in low SES schools tended to praise students much more often than they criticized them. In response to correct or incorrect answers or good or bad work. This was less true of teachers in high SES schools, where the data are more mixed. However, it is worth noting that the data are mixed, indicating that the successful teachers in high SES schools were not quite as negativistic as the criticism data might suggest. The basic reason for this is that praise was much more frequent than criticism, and thus the correlations based on criticism for wrong answers were based on a much smaller absolute number of teacher criticisms than the correlations based on teacher praise were. This does not mean that the criticism data should be played down or ignored; the data consistently showed that high SES teachers were demanding and probably hypercritical in response to student failure to respond correctly. Nevertheless, this criticism must be taken in the more general context of the fact that the teachers were not negativistic towards children in general and that they were much more likely to praise good work than they were to criticize failure.

The measure of behavioral praise over total behavior contacts is an indicant of the degree to which the teacher attended to and praised positive student behavior,

as opposed to warning or criticizing the students for negative student behavior. Surprisingly, the few significant correlations that did appear for this variable were negative, essentially because of the negative correlations in low SES schools. This obviously goes flatly against the predictions that were made on the basis of behavior modification theories. There are probably at least four things to be said concerning this. First, as noted previously, it appears that verbal praise from the teachers did not function as reward to most of the children, especially not to children in low SES schools. This point has been made in many experimental studies, and our data seem to bear it out. Thus, despite the frequent textbook emphasis on the importance of praise (which may be quite correct, given the alternatives), it nevertheless appears to be true that teacher praise is not a very powerful reinforcer for most young children and in the case of low SES children might even be a negative rather than a positive reinforcer. Second, following up on the point just made, it is usually assumed without question that praise is a positive reinforcer. However, certain children may experience teacher praise as negative reinforcement, especially if they are bright children who are trying to fight off the image of being "teacher's pet," or if they are children in a lower class school where the school mores demand that one be in a state of opposition to the teacher and not be publicly identified as someone that the teacher likes. In short, in certain situations and in certain schools, teachers may actually be punishing children when they praise them publicly. Third, as mentioned previously, we did not measure the degree to which teachers properly implemented their praising, and it is possible that negative correlations resulted because the teachers failed to specify what it was that

they were praising and/or praised inappropriately and non-contingently. Fourth, we did not record praise separately for individual students, and it is likely that some teachers praised all students roughly in proportion to their accomplishments, while others lavished most of their praise on a few "pets." Any of these factors, or all four in combination, might explain the negative correlations obtained for praise. In any case, it is clear that praise was not very important, whether it was given in response to good answers or good work by the student or whether it was given in response to good behavior and used as an attempt to motivate students.

The measure of behavioral warnings over behavioral warnings plus behavioral criticisms is an indication of the degree to which the teacher deals with inappropriate teacher behavior in a calm and unruffled manner (simply giving a warning) vs. losing her temper and acting more punitively (criticizing the child harshly). As expected, the general pattern of correlations here was positive, although there were two exceptions. Both of the latter occurred for criticism during reading groups, and discussions with coders suggest that these were delivered to children not in the reading group (i.e., children in other places in the room who were causing disruptions sufficiently intense to require the teacher to interrupt the reading group and yell at the children). Thus, in general the data again bear out Kounin in suggesting that teacher intervention to inappropriate teacher behavior should be as non-disruptive as possible, but they also indicate that sometimes non-disruptive intervention is not possible or advisable.

Section R deals more specifically with discipline and control behavior by the teachers, based on variables taken from the work of Kounin (1970). In general, the data suggest that teachers who do not make errors in their discipline reactions are more successful than those who do, and that timing errors are more

critical than target errors. Finally, the data on overreactions (which were defined as errors in the present coding) indicate a mixed but primarily positive set of correlations, which goes a long way toward explaining the mixed correlations for the measure of the percentage of contacts involving one or more error. In short, the data suggest that if the teacher errs at all, it should be in the direction of overreacting in order to nip a problem in the bud rather than underreacting and perhaps letting something get out of hand and become a major problem when it could have been stopped earlier when it was still a minor problem. Thus, the data here again support the ideas of Kounin, at least at the general principle level. More straightforward support would have been shown, of course, if all of the correlations involving discipline errors had been negative.

The measure of non-verbal control contacts over total control contacts (i.e., teacher intervention by moving near a child who is behaving inappropriately but without saying anything to the child) showed unexpected negative correlations for the most part. This probably ties in with the data for overreactions. Although both Kounin and general behavior modification theory would suggest that teacher reaction should be as non-disruptive as possible to avoid breaking the flow of the classroom (Kounin) and to avoid reinforcing the offender (behavior modification), our data suggest that the more successful teachers were more likely to overreact than to underreact. This might be partially a function of the fact that they were being observed. Since it is known that teachers being observed are more likely to approach their ideal behavior than when they do not know they are being observed, it is likely that teachers ignored many things that they might otherwise have issued warnings or criticisms for had not our observers been present.

If this is true, it is likely that the instances in which they were sufficiently aggravated to intervene with a behavioral warning or criticism were more intense than usual, and this would tend to yield the pattern of data seen in this set of variables.

Section 3 deals with combined teacher feedback data from all of the various student response opportunity situations. These data merely reconfirm what has already been said. If the teacher chooses to stay with a student who has failed to respond the first time, it is better if she provides him with some help in the form of clues or rephrasing the question than if she simply repeats the question. Also, brief feedback tends to be more appropriate than long feedback as a rule, probably because certain instances of long feedback involve the teacher in becoming engrossed with the student to the point that she fails to take action in other areas where it is required.

Section 7 deals with teacher behavior in math contacts. The percentage of public math contacts over public plus private math contacts showed positive correlations for high SES and no significant correlations for low SES. This fits with the previously given interpretation that the high SES students were more able to benefit from verbal instruction and whole group instruction than the low SES students.

The measure of teacher initiated private math contacts over total math contacts showed the expected negative correlations, indicating again that it is better if the children come to the teacher than if the teacher has to go around to check the children.

The next measure (total teacher afforded math contacts over total math time) showed a significant positive correlation in low SES, but the correlation was with word discrimination rather than with one of the math tests. This is probably best left uninterpreted.

The variable total math response opportunities over total math time reflects the degree to which math time was spent in verbal interactions as opposed to individualized practice or individualized teaching. Here again is a pattern of positive correlations but only for high SES, indicating again that verbal instruction and whole group instruction was appropriate for these students but less appropriate for low SES students.

The final variable of the table concerns the total teacher initiated contacts divided by the total teaching time. This is a measure of the degree to which the teacher initiated contacts with the students as opposed to having the students initiated contacts with the teacher or simply not having any teacher-student interaction. Only two correlations reached significance, both positive ones for low SES. Both of these were for reading group behavior, but both correlated with arithmetic gain scores. Here again, it is probably best to leave the finding uninterpreted.

Discussion

Extended discussion of the project will appear in the report of the non-linear relationships in the study (Brophy and Evertson, 1974b). This discussion will take into account the non-linear data and also the self-report data from the teachers presented in the report by Evertson and Brophy (1974). However, several general points can be made about the present set of data as they stand, even before inspection of the non-linear analyses.

In general, the methodological innovations included in the study apparently were successful in producing an unusually large and rich set of findings, although they did not result in consistently stronger correlation coefficients than previous process-product studies produced. The data generally hang together, however, although they encompass a broad range of teaching behaviors.

The correlations usually were in the same direction across all five learning gain criteria,and most of the exceptions were obvious (i.e., time spent in language arts vs. time spent in math). Thus, one implication here is that teachers are <u>generally</u> consistent across different subject matter areas in the relative degree of student learning gain that they produce. These findings could be affected by sample selection, in view of the fact that the teachers selected for study were those who were consistent across subject matter areas in the first place. However, recent data by Acland (1974) revealed similar results, even though the teachers were not selected according to any criteria having to do with their success in producing student learning gains.

Although the process-product correlations tended to be similar in direction within a data set, this was not true for the correlations for low SES vs. high SES schools. The project data make more sense in general when considered separately for these two general types of schools than they do when considered for the sample as a whole. Thus, the findings constitute a large set of aptitude-treatment interactions (assuming that SES is a proxy variable closely related to differences in student achievement levels). Briefly, the data suggest that teachers who obtain the greatest gains in low SES schools do so by being warm and encouraging and by "over-teaching," presenting the material to the children in small doses and with greater repetition of both explanations and opportunities to practice compared to teachers in high SES schools. Skillful classroom management was important to learning gains in both kinds of schools, and the data strongly support the conclusions of Kounin (1970) concerning the use of classroom management methods that keep the children continually actively engaged in productive work, minimize wasted time and dead spots, and generally avoid letting problems get started in the first place. The teachers who obtained the greatest gains in high SES schools were teachers who were primarily concerned with student learning, perhaps over-concerned in view of the generally high performance scores in these schools and in view of suggestions in the data that the teachers were hypercritical and unnecessarily demanding in their determination to see that the children learned as much as possible.

Taken together, the data provide little support and considerable negation of the central ideas underlying the concept of indirect teaching. However, this statement must be taken in connection with the caution that the data apply only

to the early elementary grades when the children are learning fundamental tool skills. The SES differences in the data provide indication that the children will benefit from indirect teaching increasingly as they get older and master fundamental tool skills and become able to assume responsibility for their own learning. In any case, however, the data strongly indicate that the learning of tool skills in the early grades requires much more direct teaching and much more time spent in practice of basic skills as opposed to classroom discussion than teachers trying to use indirect methods would be likely to provide.

The data provide mixed support for behavior modification ideas. Teachers who were rewarding and emphasized the positive generally got good results, particularly in low SES schools, although the data from high SES schools suggest that the teachers who got the best results on measures of student learning were not the most rewarding teachers. Instead, they were the most demanding and insistent teachers. However, measures of teachers' use of various rewards showed correlational patterns generally supporting behavior modification ideas, except for the generally negative pattern of correlations involving teacher praise. The data are clear in showing negative correlations between teacher praise rates and student learning, contrary to the predictions of behavior modifiers (and virtually everyone else). However, as noted earlier in the paper, there are several reasons for suspecting that teacher praise would not function as rewards for the children in the study and/or that teachers may not have been praising as effectively as they could have been, so the data are not necessarily contradictory to the fundamental assumption that <u>appropriate</u> praise functions as rewards to children.

The data provide strong support for the importance of teacher expectations. In both types of schools, it is clear that the teachers who were the most determined to teach the students were the ones who had the most success in teaching them. This was partially a matter of values (concern about student learning as a basic aspect of the teacher role, as opposed to other concerns), and partially a matter of determination and assumption of responsibility (teacher takes responsibility upon herself for making sure that the students learn vs. simply presenting the material and not being overly concerned about students who fail to progress satisfactorily). In both types of schools, the teachers who assumed responsibility for student learning and who were determined to overcome any obstacles tended to be the most successful. These data can be seen in many of the correlations in the present paper, and they come through even more clearly in the teacher self-report data (Evertson and Brophy, 1974).

The data do not support the errorless learning assumption that underlies programmed learning and other approaches to instruction based upon the idea that learning will progress most rapidly when the learner avoids errors altogether. Instead, the data from last year and the data available so far this year all suggest that very low rates of error are <u>negatively</u> associated with learning gains. The data from last year suggested that there is an optimal success rate (around 70% in high SES schools and around 80% in low SES schools) that is associated with maximal learning gains, and that the relationship between success rates and learning is a curvilinear one. Whether or not the curvilinear relationships noted last year are replicated in this year's data will be reported in a subsequent paper (Brophy and Evertson, 1974b).

The facts that a large number of the significant correlations were negative, that many of the relationships were non-linear, and that none of the linear correlations were extremely strong, all provide support for the frequently made assertion that teaching involves orchestration of a large number of variables that must be present at a given point in time according to the teacher's judgment (as opposed to the idea that good teaching involves mastery of a small number of "crucial" teaching behaviors). This assertion is further elaborated by the SES differences and contextual differences that appeared frequently, again emphasizing that different teaching behavior is optimal in different teaching contexts. The specifics of what kind of teacher behavior appeared to be optimal for what kind of contexts were delineated in the presentation of the data in the results section, so they will not be repeated here.

We close the present report with three general comments, directed particularly at fellow researchers interested in teaching effectiveness. First, it should be noted that the data indicate that student learning gains, while important, should not be used as the sole criterion of teaching effectiveness, even at the early grades, because it appears that teachers who place exaggerated emphasis upon student learning may succeed in producing such learning but perhaps at some cost in affective development in their students. This is especially relevant in high SES schools where most of the students already are well-motivated to do school work and are achieving at high levels. In such schools, over concern with achievement and under concern with personal and social development on the part of the teachers appears inappropriate. In low SES schools, in contrast, teacher concern with student learning appears to be relatively more important, although even here it probably should not be the only criterion used.

Second, let us mention once again the fact that the data were taken at the early elementary grades when the children were mostly learning fundamental tool skills of reading, writing, and arithmetic, so that many variables stressed by others simply did not apply because these variables concern learning which takes place in class discussions carried out at higher grade levels. The data of the present study do not so much contradict earlier data based on teacher-student interaction at higher grade levels so much as they indicate that teaching fundamental tool skills to early elementary school children is qualitatively different in many ways from the kinds of teaching that goes on at higher levels, and that it will require study in its own right.

Finally, related to the preceding point, the present study has produced a large number of correlational relationships between teacher behavior and student learning gain which constitute (in effect) hypotheses for experimental investigation. We plan to follow up on some of these ourselves in experimental studies, but we invite and urge fellow researchers interested in the relationship between teacher behavior and student learning gains to initiate experimental studies to test out some of these implicit hypotheses.

For additional discussion and integration of the data from the project as a whole, see Brophy and Evertson (1974b).

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Table 1. Correlations between Behavior Observation Scales[1] and Residual Gain Scores for Total Group, Title I and Non-Title I Schools for Year 1 (1972) and for Total Group, Low and High SES Schools for Year 2 (1973)(decimal points omitted).[2]

Scales	Word Knowledge (n=31)		Word Discrimination (n=31)		Reading (n=31)		Arith. Computation (n=31)		Arith. Reasoning (n=22)		Rater[3] Agreement	Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater[3] Agreement
	Total		Total		Total		Total		Total			Total		Total		Total		Total		Total		
	TI	NT	TI	NT	TI	NT	TI	NT	TI	NT		L	H	L	H	L	H	L	H	L	H	Avg. Intraclass Correlations
1. High Level of Student Attention	21	-02 23	19	17 10	32	20 27	25	17 30	15	33 14	88	28	26 34	11	50 -12	28	18 34	25	14 34	08	-03 17	89
2. Teacher Often Addresses Questions or Problems to the Whole Class	22	01 21	36	29 31	08	-36 06	-09	-19 -09	-04	-50 -03	77	21	14 28	06	05 05	08	06 14	-04	-16 07	13	-06 22	73
3. Teacher is Task Oriented, Doesn't Waste Time	27	28 21	30	47 12	31	17 24	15	16 14	08	23 06	83	10	10 19	10	46 04	17	09 16	10	32 06	-01	29 02	82
4. Frequent Pupil-to-Pupil Interaction(Class Relevant)	-02	-10 00	-22	-35 -17	11	34 07	20	59 05	16	17 16	79	-12	-51 10	-12	-45 09	07	06 14	-02	-01 -08	-02	-07 -05	87
5. % of Time Teacher Lectures or Demonstrates	36	36 33	40	22 41	19	-10 21	13	30 03	11	50 07	89	-02	-57 29	-24	-45 -09	09	02 07	05	35 -07	10	30 13	62
6. Negative Affect: Criticism, Hostility	-12	11 -18	-22	-22 -14	-18	-09 -15	-06	15 -21	01	14 01	83	03	-10 07	03	-37 28	-06	-03 -05	-06	16 -27	15	37 00	88

Table 1. (Cont'd)

Scales	Word Knowledge (n=31)	Word Discrimination (n=31)	Reading (n=31)	Arith. Computation (n=31)	Arith. Reasoning (n=22)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT		Total L H	Total L H	Total L H	Total L H	Total L H	
7. Positive Affect: Praise, Support	11 -12 08	10 28 -15	09 -05 -06	16 -06 27	04 -56 06	86	02 16 -12	30 51 13	-16 -03 -23	-11 30 -51	-28 07 -51	81
8. Requires High Level of Generalization, Inference, or Explanation	21 23 15	23 39 04	21 -24 19	-07 -06 -12	-04 -31 -05	83	15 -28 41	-01 -11 10	14 -13 17	14 15 19	25 31 33	12
9. High Student Withdrawl, Passivity, or Aimless or Repetitive Behavior	-13 25 -18	-11 09 00	-21 20 -19	-10 -08 -10	-04 -51 05	75	-34 -22 -56	-15 -36 03	-35 -35 -45	-24 -09 -46	-19 -11 -34	69
10. Clarity: Students Show Clear Understanding of Teacher Presentations	20 -05 24	16 17 05	24 04 23	19 14 23	15 60 11	86	00 19 07	19 62 06	09 06 04	08 34 -04	-13 18 -10	60
11. Enthusiasm: Teacher Shows Enthusiasm, Excitement, Enjoyment	-03 -20 -13	-04 15 -38	05 08 -20	01 -02 -01	-09 -70 -10	95	-07 07 -10	27 53 16	-07 05 -16	-08 43 -45	-30 29 -47	68
12. Convergent Questioning: Most Questions Have Clear-Cut Correct Answers	25 11 28	19 18 18	-02 16 -10	-05 -16 -01	05 25 03	72	23 11 31	-09 -19 -05	16 -09 33	08 -24 35	27 -07 44	48

Table 1. (Cont'd)

Word Knowledge (n=31)	Word Discrimination (n=31)	Reading (n=31)	Arith. Computation (n=31)	Arith. Reasoning (n=22)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
Total	Total	Total	Total	Total		Total	Total	Total	Total	Total	
TI NT	TI NT	TI NT	TI NT	TI NT		L H	L H	L H	L H	L H	

[1]High inference 5-point scale ratings made several times per classroom visit and averaged for each teacher.

[2]1972 data were divided between Title I (n=13) and non-Title I (n=18) schools; 1973 data were divided into Low SES (n=13) and High SES (n=15) sets by splitting at the median on school SES scores obtained from the school district. In each data set, the r for the total group is on top, the r for Title I/Low SES at lower left, and the r for non-Title I/High SES at lower right. Correlations underlined once are statistically significant at $p \leq .10$; correlations underlined twice are statistically significant at $p \leq .05$.

[3]1972 data are percent agreement figures for agreement within one point between two raters rating in the classroom; 1973 data are intraclass correlations of ratings of videotapes by several raters.

Table 2. Correlations between Teacher Behavior Checklist Variables[1] and Residual Gain Scores for Total Group, Title I and Non-Title I Schools for Year 1 (1972) and for Total Group, Low and High SES Schools for Year 2 (1973) (decimal points omitted)[2]

Checklist Variables	Word Knowledge (n=27-30)	Word Discrimination (n=27-30)	Reading (n=27-30)	Arith. Computation (n=27-30)	Arith. Reasoning (n=19-21)	Rater Agreement[3]			Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement[3]		
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Both	One	None	Total L H	Total L H	Total L H	Total L H	Total L H	Both	One	None
A. Methods of Handling Catch-Up Work																
1. No Remediation; Child Skips Missed Work	- - - -	- - - -	- - - -	- - - -	- - - -	0	2	108	-09 -02 -19	-08 -04 -16	00 21 -08	-14 -35 01	-02 -13 -04	1	14	92
2. Child Must Make Up Work but is not Given Help	-03 - -09	07 - -02	-07 - -19	-01 - -02	-13 - -15	1	5	104	03 10 -08	14 25 03	-27 07 -37	-23 -01 -42	-03 11 -15	3	22	80
3. Teacher Explains Work and Has Child Do Part of It.	26 - 25	18 - 07	17 - 07	19 - 15	-07 - -08	1	13	96	26 -12 59	-14 -26 00	36 04 47	-08 -51 23	-02 -59 26	19	26	44
4. Another Child is Assigned to Help	11 - -	04 - -	15 - -	14 - -	-19 - -	0	6	104	-02 -06 -05	-15 -36 -03	-04 -15 04	-08 -19 00	-07 -46 -04	3	20	82
5. Child Put In Slower Group Temporarily	- - -	- - -	- - -	- - -	- - -	1	0	109	- - -	- - -	- - -	- - -	- - -	0	0	108
6. Other	- - -	- - -	- - -	- - -	- - -	0	1	109	- - -	- - -	- - -	- - -	- - -	0	6	102

Table 2. (Cont'd)

	Word Knowledge (n=27-30)	Word Discrimination (n=27-30)	Reading (n=27-30)	Arith. Computation (n=27-30)	Arith. Reasoning (n=19-21)	Rater Agreement			Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement		
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Both	One	None	Total L H	Total L H	Total L H	Total L H	Total L H	Both	One	None
B. Rules Regarding Physical Movement																
1. Must Always Get Permission to leave Seat	06 33 -01	16 16 29	05 00 17	09 00 19	09 14 12	2	10	97	-21 — —	-23 — —	-41 — —	-31 — —	-49 — —	0	8	100
2. One at a Time without Permission	— — —	— — —	— — —	— — —	— — —	0	1	108	18 — —	11 — —	16 — —	14 — —	-05 — —	0	15	93
3. As Many as 4 or 5 Without Permission	— — —	— — —	— — —	— — —	— — —	0	5	104	-36 — —	-16 — —	-57 — —	-51 — —	-39 — —	0	6	102
4. Can Go Quietly to Specified Places without Permission at any Time	02 -50 15	-16 -29 -29	06 -20 06	05 -06 12	-03 -47 00	23	20	66	28 01 57	17 38 09	29 -23 51	17 -23 53	26 -31 59	26	23	33
5. No Restrictions	06 42 -03	05 29 06	-03 29 -10	03 34 -28	01 70 -14	4	12	93	-05 — —	-10 — —	17 — —	22 — —	22 — —	4	3	97
6. Some Children Allowed Free Movement but not Others	— — —	— — —	— — —	— — —	— — —	1	1	107	-32 — —	-23 — —	-31 — —	-18 — —	-11 — —		3	101

Table 2. (Cont'd)

	Word Knowledge (n=27-30)	Word Discrimination (n=27-30)	Reading (n=27-30)	Arith. Computation (n=27-30)	Arith. Reasoning (n=19-21)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Both One None	Total L H	Total L H	Total L H	Total L H	Total L H	Both One None
7. Only monitors allowed free movement	— — —	— — —	— — —	— — —	— — —	0 1 108	- - -	- - -	- - -	- - -	- - -	0 0 108
8. Other	-39 -43 -49	-34 -45 -27	-27 -23 -34	-27 -23 -35	-37 - -39	1 3 105	-24 22 -46	-05 -20 01	-33 38 -53	-47 -10 -68	-28 06 -41	0 4 104
C. Punishments Used By Teacher												
1. Stay after school	07 28 00	07 22 01	30 78 11	16 35 01	13 16 16	5 8 96	21 -38 61	25 -04 44	25 -10 54	24 28 18	34 34 33	5 17 81
2. Spanking	— — —	— — —	— — —	— — —	— — —	1 3 105	-24 -18 —	5 -01 —	-34 -06 —	-12 39 —	-08 35 —	4 7 93
3. Writing sentences on board	- - -	- - -	- - -	- - -	- - -	0 0 109	-03 -18 12	-17 -34 -08	07 11 26	08 10 01	21 44 03	2 2 102
4. Isolation Within the Classroom	10 — 03	10 — 09	12 — -02	01 — 01	-04 — -05	4 14 91	-04 23 -20	-12 -27 -05	-13 25 -24	-18 -02 -29	-22 -03 -34	6 12 84
5. Removal From the Classroom	-06 21 -16	-11 -04 -13	-06 24 -17	-09 -05 -11	-02 21 -07	9 7 93	-24 -45 -10	-08 -43 22	-17 -29 -16	-17 -11 -23	09 11 11	7 16 78
6. Note to Parents	— — —	— — —	— — —	— — —	— — —	0 1 108	25 -33 55	29 -06 48	22 -19 36	15 12 17	18 09 21	3 9 93

Table 2. (Cont'd)

	Word Knowledge (n=27-30)	Word Discrimination (n=27-30)	Reading (n=27-30)	Arith. Computation (n=27-30)	Arith. Reasoning (n=19-21)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Both One None	Total L H	Total L H	Total L H	Total L H	Total L H	Both One None
7. Send to Principal	— — -11	— — -02	— — -10	— — -08	— — 03	3 4 102	-13 -38 —	-20 -32 —	-12 -21 —	08 10 —	-02 03 —	1 8 98
8. Extra Reading, Math, Etc., Work	— — —	— — —	— — —	— — —	— — —	0 5 104	-16 -24 -19	-35 -45 -39	-07 11 -23	-08 02 -30	-05 33 -46	0 3 105
9. Peer Pressure (e.g. "You lost the race for your group.")	08 — -03	-05 — -18	09 — 08	09 — 02	03 — 01	1 15 93	19 -16 45	13 -16 35	15 -12 36	05 02 05	10 -06 09	2 19 85
10. Scolding	-09 02 -11	00 -13 24	03 30 01	13 37 -07	16 57 13	12 23 74	14 -31 35	12 -59 51	07 -21 20	-05 -27 06	26 -18 32	26 18 38
11. Discussion of Incident (No Scolding)	16 -25 38	-05 -08 -04	22 00 37	02 -30 31	21 -80 44	8 14 87	29 09 45	05 13 02	26 -25 45	02 -31 25	00 -32 11	17 31 43
12. Other	23 — 20	08 — 01	32 — 29	10 — 12	09 — 13	1 43 95	02 — 27	-03 — 31	00 — -14	00 — -07	-28 — -51	0 12 96
D. Rewards Used by Teacher												
1. Classmates Clap or Cheer	-06 -41 03	[illegible] -18 16	-02 -24 02	-23 -31 -19	-29 -81 -24	3 16 90	-38 -40 -51	-25 -16 -43	-30 -24 -40	-33 -06 -69	-44 -19 -83	6 10 86

Table 2. (Cont'd)

	Word Knowledge (n=27-30)		Word Discrimination (n=27-30)		Reading (n=27-30)		Arith. Computation (n=27-30)		Arith. Reasoning (n=19-21)		Rater Agreement			Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement		
	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Both	One	None	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Both	One	None
2. Special Privileges	—	—	—	—	—	—	—	—	—	—	0	7	102	36		14		16		-05		03				
	—	-27	—	-31	—	-02	—	-09	—	-13				29	44	22	13	-02	22	-07	-03	-36	13	5	25	73
3. Waiver or Reduction of Assignments	—	—	—	—	—	—	—	—	—	—	0	1	108	29		11		26		13		21				
	—	—	—	—	—	—	—	—	—	—				—	—	—	—	—	—	—	—	—	—	0	10	98
4. Symbols (Stars, Smiling Faces, etc.)	—		—		—		—		—		3	13	93	21		46		07		26		25				
	21	-08	30	-19	10	-24	31	-14	27	-21				02	38	52	46	-01	29	37	13	63	01	3	15	87
5. Token Redeemable for Other Rewards	00		-10		-01		12		13		2	1	106	-		-		-		-		-				
	-	-03	-	-19	-	-08	-	15	-	14				-	-	-	-	-	-	-	-	-	-	0	0	108
6. Concrete Rewards (Candy, Money, Prizes)	—	—	—	—	—	—	—	—	—	—	0	3	106	-12		-08		-04		12		04				
	—	—	—	—	—	—	—	—	—	—				—	—	—	—	—	—	—	—	—	—	3	7	95
7. Jobs (Monitor, Helper, Clean Erasers)	07		08		14		00		09		2	5	102	-27		-21		-43		-32		-20				
	03	10	-06	22	22	14	-06	05	-85	21				-44	-20	-20	-30	-69	-42	-39	-30	-42	-21	3	19	83
8. Public Recognition (Gets to Read or Work Problem on Board)	17		11		26		-11		07		8	16	85	-21		06		-11		-12		-27				
	09	18	-08	15	-26	40	-39	03	-26	10				-09	-27	25	-04	-13	-17	-06	-16	-26	-24	12	29	55
9. Other	—		—		—		—		—		0	18	101	-10		-09		-03		11		20				
	-36	—	-22	—	-31	—	-29	—	-30	—				—	—	—	—	—	—	—	—	—	—	1	6	100

Table 2. (Cont'd)

	Word Knowledge (n=27-30)	Word Discrimination (n=27-30)	Reading (n=27-30)	Arith. Computation (n=27-30)	Arith. Reasoning (n=19-21)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Both One None	Total L H	Total L H	Total L H	Total L H	Total L H	Both One None
E. Appropriateness of Assignments												
1. Too Short or Easy	-23 -36 -16	-16 -23 -02	-06 18 -11	-03 27 -35	-09 54 -31	13 18 77	-32 -19 -49	-20 -44 -16	-40 08 -53	-41 -34 -51	-23 -19 -35	8 31 61
2. Boring, Repetitive, Monotonous	-24 27 -45	-04 30 -05	-20 29 -33	-13 08 -33	-15 02 -23	7 20 81	08 -18 21	02 -20 15	07 -01 16	08 34 -18	25 45 15	7 24 70
3. Too Hard: Students Can't Get Started or Continually Need Help	-11 03 -13	-15 -03 -07	-21 -06 -19	00 02 00	-02 -71 10	3 17 88	-01 -33 —	-18 -48 —	-17 -57 —	04 -38 —	25 -32 —	10 15 73
4. Continues Activity Too Long, until it gets Boring	-27 -15 -30	-22 -25 -12	-24 -09 -23	-10 16 -26	-05 -20 -04	5 17 86	-19 -27 -32	-20 -28 -28	-31 09 -45	-12 33 -49	-09 59 -49	6 22 74
5. No Inappropriate Assignments	30 04 35	22 08 13	40 20 40	34 28 44	25 -41 33	11 17 80	07 43 -04	22 61 07	18 38 08	20 47 06	-09 51 -21	8 27 65
F. Distractions: What Do Students Do When not Working?												

Table 2. (Cont'd)

	Word Knowledge (n=27-30)		Word Discrimination (n=27-30)		Reading (n=27-30)		Arith. Computation (n=27-30)		Arith. Reasoning (n=19-21)		Rater Agreement		
	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Both	One	None
1. Use Washroom	06		-10		-01		-02		-23		14	18	76
	39	-03	17	-19	22	-04	32	-29	-17	-27			
2. Repeatedly Get Supplies for Free Time Activities	-05		16		-05		03		13		6	10	92
	-35	08	-59	11	-21	07	08	-01	05	17			
3. Watch Reading Group or other Activity	-35		01		-34		-41		-33		3	20	85
	-42	-33	-18	12	-27	-35	-31	-46	-21	-34			
4. Talk	10		-08		07		-13		-04		33	20	55
	-10	23	-02	-10	00	14	-22	-06	07	-05			
5. Play	00		-23		-02		16		15		12	20	76
	01	09	-36	-03	21	00	39	01	82	13			
6. Daydream	-16		-25		-24		-15		03		11	19	78
	-24	-09	-34	-11	-49	-04	-48	11	-58	16			
7. Ask for Help or Look More Closely at Work on Board	03		-07		17		22		25		6	18	84
	00	06	-12	-01	30	17	45	09	34	26			
8. Disrupt other Students	-03		-09		-08		00		-04		15	19	74
	08	-08	-12	-08	-01	-13	-03	02	-17	-03			

	Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement		
	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Both	One	None
1. Use Washroom	01		09		25		-04		-03				
	-26	25	-61	56	-10	34	-21	09	-09	05	17	18	56
2. Repeatedly Get Supplies for Free Time Activities	-23		-10		-07		-10		06				
	-59	06	-55	31	05	-15	12	-30	33	-08	8	23	69
3. Watch Reading Group or other Activity	-11		-19		-11		06		09				
	-21	-04	-43	01	-25	-05	-08	21	09	01	5	26	72
4. Talk	16		34		18		-05		01				
	–	–	–	–	–	–	–	–	–	–	47	5	9
5. Play	-04		12		09		20		32				
	-47	23	-36	47	-23	23	25	17	32	33	20	20	48
6. Daydream	-20		-10		-26		-14		06				
	-39	-13	-18	-08	-42	-22	-29	-04	-10	06	13	23	59
7. Ask for Help or Look More Closely at Work on Board	-35		-34		-08		-11		-15				
	-48	-25	-69	-10	-44	01	-31	05	-09	-17	6	23	73
8. Disrupt other Students	16		24		-04		-14		12				
	-08	18	-24	42	-44	13	-47	-04	-42	16	26	18	38

Table 2. (Cont'd)

	Word Knowledge (n=27-30)	Word Discrimination (n=27-30)	Reading (n=27-30)	Arith. Computation (n=27-30)	Arith. Reasoning (n=19-21)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Both One None	Total L H	Total L H	Total L H	Total L H	Total L H	Both One None
9. Other	-19 26 -	-17 -19 -	-36 -23 -	-19 29 -	-20 18 -	0 7 101	-32 - -	-02 - -	-41 - -	-57 - -	-38 - -	0 3 105
6. Student Attitudes toward the Teacher												
a. When Having Trouble Students Concentrate or Seek Help	-13 -11 -19	-09 06 -27	02 25 -15	-08 13 -24	-17 -12 -20	13 30 62	16 43 -07	23 48 00	-01 09 -08	-07 -12 -02	00 -12 07	18 32 40
b. When Having Trouble, Students Merely Copy From Neighbor	-28 -68 -10	-37 -68 -10	-21 -14 -14	-10 -16 -06	-06 -43 -	8 16 81	-18 -67 10	-15 -51 09	-17 -40 -02	-01 -09 01	23 13 24	4 14 86
c. Students Work as Well When not Watched as When Watched	09 -26 17	12 -02 09	25 -05 31	13 -07 25	23 -59 35	11 16 78	09 04 08	02 -02 01	15 22 17	22 16 26	17 41 04	7 32 62
d. Students "Act Up" When Unwatched	-06 04 -05	-19 -36 -01	-05 22 -07	07 22 -03	07 48 05	11 18 76	01 -15 08	01 -30 18	-10 -23 -06	-18 -26 -13	09 -08 13	15 19 59
e. Students Seem Amused by Teacher	-06 16 -13	04 15 02	02 30 -07	10 20 04	06 02 10	4 8 93	-20 - -	-02 - -	-29 - -	-22 - -	-13 - -	3 8 94

Table 2. (Cont'd)

	Word Knowledge (n=27-30)	Word Discrimination (n=27-30)	Reading (n=27-30)	Arith. Computation (n=27-30)	Arith. Reasoning (n=19-21)	Rater Agreement			Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement		
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Both	One	None	Total L H	Total L H	Total L H	Total L H	Total L H	Both	One	None
. Students Seem to Fear Teacher	— — —	— — —	— — —	— — —	— — —	0	5	100	15 15 —	05 02 —	00 10 —	14 16 —	15 05 —	2	5	99
. Students Seem to Respect Teacher	13 23 02	16 43 -17	01 -29 -01	-08 -30 07	-04 -62 04	28	12	65	21 11 33	17 35 10	25 -10 38	07 -13 23	-07 -38 12	36	12	24
. Free Time Materials Available (Not Necessarily Used)																
. Books	-25 -10 -45	-09 -01 -25	-34 -28 -54	-32 -38 -30	-39 -33 -46	41	16	45	-21 16 -56	-26 08 -61	-31 -18 -46	-12 02 -27	-30 -14 -41	46	8	8
. Learning Centers (Any)	11 -03 06	19 08 09	19 17 06	-05 -38 09	07 -22 12	9	21	72	-25 33 -50	09 55 -12	-19 33 -37	-02 57 -33	-40 30 -61	11	21	65
. Listening Centers	-02 12 -09	-01 18 -13	00 28 -14	-21 -29 -16	-28 -01 -33	19	14	69	-03 56 -41	20 70 -15	-28 21 -48	00 34 -25	-17 09 -30	20	22	46
. Visual (Picture Files, Filmstrips)	07 74 -12	15 43 -04	02 18 -14	-08 31 -25	-10 56 -16	4	19	79	-10 22 -28	18 31 10	-19 -40 -13	-07 07 -15	-34 -23 -44	10	25	63
. Science Demonstrations or Experiments	15 08 14	01 -20 02	10 15 -02	-04 07 -14	00 - -01	5	16	81	-25 -25 -36	-02 -03 -08	-15 01 -21	00 25 -24	-23 10 -46	1	20	86
. Other (Specify)	18 — 18	-04 — -02	-02 — 04	12 — 19	21 — 21	1	9	92	19 — —	20 — —	-19 — —	-17 — —	-16 — —	0	12	96

Table 2. (Cont'd)

	Word Knowledge (n=27-30)	Word Discrimination (n=27-30)	Reading (n=27-30)	Arith. Computation (n=27-30)	Arith. Reasoning (n=19-21)	Rater Agreement			Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement		
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Both	One	None	Total L H	Total L H	Total L H	Total L H	Total L H	Both	One	None
7. Coloring Pictures	03 -26 15	-23 -30 -19	11 01 17	08 08 07	01 -13 04	7	27	68	02 27 -09	25 34 22	-06 03 -11	-03 00 -03	-17 -34 -10	19	28	42
8. Painting, Art Activities	-20 -12 -25	-29 -22 -35	-11 33 -33	-09 21 -34	-29 -07 -35	8	19	75	-01 08 -07	19 06 29	04 39 -09	15 40 -02	05 59 -16	9	27	63
9. Games (Any)	-03 -43 05	-04 -30 -03	-02 -19 -05	-06 -27 04	-08 -09 -08	14	22	66	-02 71 -43	23 54 06	-02 59 -25	02 51 -31	-30 33 -50	12	24	60
10. Instructional Games	-16 -56 -06	-24 -45 -21	-10 -09 -18	-10 -45 14	-08 -54 -02	23	18	61	-03 04 -04	-01 -13 11	00 -22 08	-04 -09 02	-16 -13 -21	26	22	34
11. Non-instructional Games	-13 -51 -01	-21 38 -14	-15 -13 -16	-06 -37 13	00 -21 03	14	24	64	14 13 12	04 03 01	-14 -28 -07	-18 -14 -25	-25 -24 -42	17	25	49
12. Aquarium, other Looking Exhibits	02 39 -11	03 34 -13	-15 -10 -17	-20 -28 -14	00 -03 01	18	16	68	-37 -26 -52	-13 05 -31	-23 00 -37	-09 31 -46	-03 -65 -29	10	8	80
I. Free Time Materials Observed In Use																
1. Books	10 12 06	19 34 04	-08 -01 -21	-27 -37 -23	-20 -26 -21	25	16	61	-05 06 -06	-10 -03 -10	-02 -12 -02	-04 -10 07	03 -04 12	30	21	27
2. Learning Centers (Any)	20 - 20	11 - -03	28 - 19	02 - 12	10 - 14	4	15	83	-23 34 -53	12 55 -11	-19 36 -38	-06 48 -39	-42 24 -64	9	22	68

Table 2. (Cont'd)

	Word Knowledge (n=27-30)		Word Discrimination (n=27-30)		Reading (n=27-30)		Arith. Computation (n=27-30)		Arith. Reasoning (n=19-21)		Rater Agreement		
	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Both	One	None
3. Listening Centers	09	04 08	-03	16 -16	19	60 02	-07	00 -11	-28	-04 -31	9	17	76
4. Visual (Picture Files, Filmstrips)	40	58 33	28	31 20	26	16 23	16	22 13	13	38 11	3	14	85
5. Science Demonstrations or Experiments	31	- 35	20	- 14	29	- 32	09	- 21	16	- 18	0	15	87
6. Other (Specify)	19	16 20	-05	-13 -04	01	-25 08	12	-02 20	24	28 24	1	10	91
7. Coloring Pictures	13	-24 30	-11	-26 -02	09	-13 21	00	-12 08	03	-47 13	5	23	74
8. Painting, Art Activities	-11	-02 -18	-16	-04 -27	01	37 -19	-05	29 -32	-27	-07 -36	5	15	82
9. Games (Any)	-02	-44 11	-14	-26 -13	01	-11 02	-06	-21 03	-08	-12 -08	6	23	73
10. Instructional Games	-01	-32 08	-12	-06 -19	13	45 -02	03	-08 10	-10	-54 -04	12	16	74
11. Non-instructional Games	-06	-38 07	-16	-26 -11	-03	03 -05	-05	-23 10	-06	-06 -07	12	19	71

	Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement		
	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Both	One	None
3. Listening Centers	-26	09 -43	06	48 -16	-34	06 -51	-13	30 -38	-34	15 -42	14	21	59
4. Visual (Picture Files, Filmstrips)	-26	-11 -33	03	-06 09	-26	-55 -18	-11	-01 -16	-30	-21 -38	7	21	73
5. Science Demonstrations or Experiments	-18	- -	-15	- -	-06	-- -	-19	- -	-37	- -	0	12	96
6. Other (Specify)	09	- -	25	- -	-36	- -	-31	- -	-17	- -	0	9	99
7. Coloring Pictures	-06	08 -09	16	14 22	-07	-05 -11	00	08 -03	-16	-23 -10	18	28	44
8. Painting, Art Activities	-04	00 -06	20	-06 39	05	51 -13	07	32 -11	09	47 -05	8	23	69
9. Games (Any)	08	79 -34	27	61 08	08	53 -11	08	39 -14	-24	14 -39	8	25	67
10. Instructional Games	13	39 05	12	18 16	08	-20 15	-14	-23 -06	-28	-38 -24	19	27	43
11. Non-instructional Games	21	34 10	15	28 02	-14	-24 -11	-21	-09 -33	-31	-30 -42	14	26	54

Table 2. (Cont'd)

	Word Knowledge (n=27-30)	Word Discrimination (n=27-30)	Reading (n=27-30)	Arith. Computation (n=27-30)	Arith. Reasoning (n=19-21)	Rater Agreement			Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement		
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Both	One	None	Total L H	Total L H	Total L H	Total L H	Total L H	Both	One	None
12. Aquariums, Other Looking Exhibits	11 - 02	12 - -10	12 - -01	-14 - -19	-07 - -08	4	13	85	-32 -28 -	03 06 -	-33 -02 -	-14 27 -	-35 56 -	5	5	93
J. Use of Peer Tutoring	-11 21 -22	-12 23 -31	-02 27 -15	-09 09 -19	-14 04 -15	7	15	87	14 09 13	-16 -27 -15	-02 -30 18	-18 -66 26	06 -73 32	5	14	84
K. Assigns Homework besides Seatwork	23 -26 38	13 -29 25	34 -04 46	19 19 19	08 -32 13	4	23	82	21 -20 44	26 11 34	13 -18 24	09 37 -07	13 26 08	8	29	63
L. Teacher Sometimes Underreacts to Control Problems, so Serious Problems Go Unresolved	-13 -39 -06	-07 -52 21	-11 -12 -12	03 17 -09	05 05 06	6	13	90	-30 - -32	-15 - -10	-25 - -36	-03 - -22	-01 - -10	3	9	93

[1]High inference ratings made on checklists by two observers who had each observed the teacher, averaged across observers.

[2]1972 data were divided between Title I (n=13) and non-Title I (n=18) schools; 1973 data were divided into Low SES (n=13) and High SES (n=15) sets by splitting at the median on school SES scores obtained from the school district. In each data set, the r for the total group is on top, the r for Title I/Low SES at lower left, and the r for non-Title I/High SES at lower right. Correlations underlined once are statistically significant at $p \leq .10$; correlations underlined twice are statistically significant at $p \leq .05$.

[3]Rater agreement data reflect category usage by observers. The "Both" column indicates the number of times that both raters checked the category in rating a teacher; the "One" column indicates the number of times that one rater checked and the other didn't; the "None" column indicates the number of times that neither rater used the category in rating a teacher.

Table 3. Correlations between High-Inference Ratings[1] and Residual Gain Scores for Total Group, Title I and Non-Title I Schools for Year 1 (1972) and for Total Group, Low and High SES Schools for Year 2 (1973) (decimal points omitted).[2]

Ratings Variables	Word Knowledge (n=24-28)	Word Discrimination (n=24-28)	Reading (n=24-28)	Arith. Computation (n=24-28)	Arith. Reasoning (n=18-20)	Rater Agreement[3]	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement[3]
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT		Total L H	Total L H	Total L H	Total L H	Total L H	
1. Typical Affection-ateness Level	26 -21 42	14 -01 19	14 -25 26	21 -03 35	11 -49 17	86	07 -09 12	20 19 07	13 -22 19	05 06 -06	-16 00 -21	80
2a. Most Intense Affection Expression Observed	14 -52 44	01 -40 16	22 -04 24	28 20 30	14 -53 22	90	09 05 14	32 07 24	12 27 18	06 10 -10	-12 06 -17	89
2b. Most Intense Negative Affect Observed	-17 11 18	-18 37 00	-06 -13 08	-06 -28 42	-15 -61 24	75	04 -24 25	01 -32 32	-01 -24 09	01 -10 12	28 10 34	76
3. Solidarity with Class: Teacher Identifies, Promotes "We" Feeling	22 -25 39	16 15 08	16 -05 14	01 -34 28	06 -83 20	84	-06 -15 -02	25 18 17	03 19 09	07 08 00	01 00 02	78
4. Patient and Supportive When Correcting	20 -14 32	04 11 -15	10 -25 14	-03 -28 15	03 -51 08	86	-12 30 -30	-06 25 -29	-17 11 -22	-24 -15 -27	-43 -20 -46	78
5. Students Allowed Choice in Assignments	-01 16 -14	00 31 -22	-06 33 -33	-20 -22 -26	-24 21 -37	82	17 27 00	32 08 31	15 37 20	32 04 45	19 -35 25	79
6. Accepts Student Ideas and/or Integrates Them Into Discussion	04 -16 08	06 18 -13	09 06 -04	-13 -20 -16	-21 -84 -28	79	01 32 -42	31 39 12	-09 19 -34	-17 02 -61	-29 -13 -56	92

Table 3. (Cont'd)

	Word Knowledge (n=24-28)	Word Discrimination (n=24-28)	Reading (n=24-28)	Arith. Computation (n=24-28)	Arith. Reasoning (n=18-20)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT		Total L H	Total L H	Total L H	Total L H	Total L H	
7. Admits Own Mistakes; Laughs at Self or Uses Occasion to Teach or Motivate	04 44 -17	12 78 -30	-09 -02 -23	-26 -34 -22	-19 34 -30	84	13 -07 31	02 05 -12	24 17 37	15 04 18	13 12 15	74
8. Usually Bends Close, Gets Down to Child's Level	38 25 47	28 46 11	20 -10 30	-04 -35 24	14 -31 24	71	07 03 06	13 02 00	05 34 05	08 -01 08	20 14 20	76
9. Goes to Seats to Check Work; Doesn't Stay at Desk	-03 -33 01	-12 -12 -20	22 21 16	-13 -06 -25	-14 -53 -14	83	-44 -13 -54	-45 -16 -67	-46 00 -56	-24 11 -52	-24 -02 -32	78
10. Usually Speaks to Individuals rather than Whole Class	-13 -13 -22	-04 -20 -01	06 11 -04	14 35 -12	02 -26 02	84	-18 -26 -14	02 -15 04	-17 14 -19	05 17 -05	01 30 -07	67
11. Uses Advance Organizers in Introducing Activities	30 -01 39	19 14 15	11 -37 22	03 -23 18	02 -73 13	71	-02 02 05	11 16 06	04 15 00	01 20 -19	-20 11 -30	70

Table 3. (Cont'd)

	Word Knowledge (n=24-28)		Word Discrimination (n=24-28)		Reading (n=24-28)		Arith. Computation (n=24-28)		Arith. Reasoning (n=18-20)		Rater Agreement	Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement
	Total		Total		Total		Total		Total			Total		Total		Total		Total		Total		
	TI	NT	TI	NT	TI	NT	TI	NT	TI	NT		L	H	L	H	L	H	L	H	L	H	
12. Gives Complete, Detailed Instructions: Prevents Errors before They Happen	32		20		12		-17		04			07		02		16		-08		-24		
	01	36	33	02	-44	18	-72	13	-59	10	67	19	16	12	-02	24	16	00	-13	-14	-21	82
13. Students Eager to Respond; No fear	17		24		27		19		02			-01		22		-10		-09		-15		
	27	03	32	11	14	20	15	15	07	-02	86	10	-18	08	15	26	-18	12	-42	45	-51	76
14. Teacher Waits Patiently If Student Doesn't Respond Promptly	13		02		-01		-15		-13			-04		-04		-22		-33		-41		
	21	06	44	-31	-25	01	-34	-03	-67	-13	73	31	-31	18	-31	03	-24	-32	-29	-47	-43	76
15. Non-Competitive Atmosphere; No signs of Eagerness to See Others Fail	-12		-20		-19		-06		-17			25		02		20		29		19		
	13	-13	01	-24	03	-10	16	-22	11	-27	50	24	30	13	-18	24	30	10	49	-20	41	70
16. Students Allowed to Work in Cooperative Groups	10		-07		15		00		17			23		17		24		01		17		
	-34	26	-20	00	27	14	-12	10	-47	24	71	-16	47	-46	60	07	52	-45	37	-76	39	56

Table 3. (Cont'd)

	Word Knowledge (n=24-28)	Word Discrimination (n=24-28)	Reading (n=24-28)	Arith. Computation (n=24-28)	Arith. Reasoning (n=18-20)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT		Total L H	Total L H	Total L H	Total L H	Total L H	
17. Teacher Recognizes Good Thinking Even When It Doesn't Lead to "Right" Answers	11 14 02	-07 29 -41	03 -04 -11	-19 -26 -23	-22 -46 -26	83	16 42 06	32 68 10	10 21 05	-03 15 -16	-17 00 -15	65
18. Democratic Leadership Style: Students Share in Planning and Decision Making	20 02 16	09 26 -16	25 07 14	-07 -03 -23	-17 -63 -25	81	12 23 -03	13 22 -01	-08 22 -17	-10 -14 -12	-15 -41 -15	59
19. Few Restrictions on Students During Seatwork Periods	10 -02 34	-06 02 00	08 19 21	08 28 -05	01 30 -02	69	04 -61 26	18 -47 45	13 05 21	00 -20 07	21 04 18	69
20. Students Expected to Care for Needs Without Getting Permission	38 22 41	15 29 -01	29 26 21	17 13 15	26 57 22	66	15 -55 53	16 -24 38	38 -06 54	25 -12 47	48 08 64	66
21. Teacher Concerned with Substantive Content, not Form, of Student Responses	08 51 -10	-06 33 -31	-10 08 -15	23 47 -01	14 62 05	75	18 18 15	33 27 36	14 38 10	30 30 30	33 40 32	73

Table 3. (Cont'd)

	Word Knowledge (n=24-28)		Word Discrimination (n=24-28)		Reading (n=24-28)		Arith. Computation (n=24-28)		Arith. Reasoning (n=18-20)		Rater Agreement	Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement
	Total		Total		Total		Total		Total			Total		Total		Total		Total		Total		
	TI	NT	TI	NT	TI	NT	TI	NT	TI	NT		L	H	L	H	L	H	L	H	L	H	
22. Teacher Stresses Factual Realism, Rejects or Corrects Childish Idealism	06		-07		-10		-17		-16			16		31		15		27		02		
	26	-04	40	-28	00	-20	-40	-04	-36	-19	86	23	09	53	14	-07	28	36	20	33	-12	80
23. Teacher Credibility: Students Seem to Believe and Respect Teacher	20		11		16		09		04			25		16		28		18		05		
	-08	27	17	-01	-16	19	-17	27	-61	12	76	04	41	24	05	-02	45	-06	33	-26	20	87
24. Showmanship: Teacher Is Melodramatic, Expressive, Gushy, Emotive	-11		09		-07		24		04			-28		-03		-21		-14		01		
	-18	-15	-15	15	30	-30	58	-02	19	02	80	-09	-41	04	-07	49	-43	26	-37	23	-07	70
25. Teacher Gets Attention before Starting, Doesn't Try to Talk over Din	30		27		32		-01		00			19		05		17		18		-07		
	17	33	41	10	-05	45	-30	20	-66	07	82	38	13	57	-20	01	20	05	26	-17	-01	76
26. Chactic, Unplanned, Poorly Scheduled	-25		-38		-20		05		-24			10		02		10		08		33		
	-33	-22	-48	-33	12	-42	46	-48	20	-49	78	-20	23	-45	29	23	15	-23	30	-10	47	89

Table 3. (Cont'd)

	Word Knowledge (n=24-28)	Word Discrimination (n=24-28)	Reading (n=24-28)	Arith. Computation (n=24-28)	Arith. Reasoning (n=18-20)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT		Total L H	Total L H	Total L H	Total L H	Total L H	
27. Teacher Seems Confident, Self-Assured	22 42 14	11 44 -07	02 -12 07	06 05 06	-04 03 -07	90	27 13 35	20 45 05	21 -23 38	12 -06 21	02 -27 12	93
28. Politeness: Teacher Regularly Says "Please" "Thank You," etc.	02 02 -03	00 29 -26	02 11 -12	00 -15 12	-02 -43 02	98	03 -06 13	-09 16 -29	00 -32 15	-12 -26 01	-13 -53 05	76
29. High Concern about Achievement	23 16 19	15 31 -06	09 -24 07	-05 -31 08	-07 -61 -	88	22 48 16	23 65 02	10 -27 22	-06 -13 02	-10 -07 -02	89
30. Room is Attractive	44 36 45	35 55 14	32 34 17	04 -10 05	11 08 10	74	-21 -06 -29	-01 24 -15	-06 07 -37	-12 19 -55	-23 10 -44	92
31. Teacher Gives Much Encouragement to Students	05 -16 04	05 24 -28	11 06 -09	-07 -26 03	-08 -52 -08	88	04 06 05	14 27 05	-02 24 -08	-09 07 -22	-19 01 -25	91
32. Room is Uncrowded	56 45 59	40 21 41	53 03 62	46 40 50	43 60 48	74	-17 25 -37	-04 33 -24	-20 -26 -30	-18 12 -44	-26 00 -31	73
33. Teacher Explains Rules or Decisions When Reasons Aren't Obvious	40 32 41	30 53 07	19 -08 18	02 -25 16	06 -64 10	87	01 07 -04	10 14 06	-01 01 -01	-20 -30 -11	-32 -52 -29	70

Table 3. (Cont'd)

	Word Knowledge (n=24-28)	Word Discrimination (n=24-28)	Reading (n=24-28)	Arith. Computation (n=24-28)	Arith. Reasoning (n=18-20)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT		Total L H	Total L H	Total L H	Total L H	Total L H	
4. Teacher Well Organized, Prepared	46 50 42	32 55 09	21 -21 25	-03 -47 27	14 -36 25	84	-11 -01 -04	00 29 -09	00 -22 00	02 04 08	-16 -11 -02	80
5. Teacher Regularly Monitors Class, Knows What's Going On	35 34 31	32 53 08	23 -04 20	00 -25 14	00 -40 04	86	41 73 29	21 73 -02	30 15 34	23 12 29	08 -06 13	90
6. Smooth, Efficient Transitions, Little Time Wasted	49 50 47	36 64 15	35 08 37	13 -08 25	14 -24 19	70	02 45 -14	07 42 -12	03 27 -09	-02 18 -14	-29 03 -31	65
7. Monitors Determined "Automatically" by a Systematic Procedure	37 41 29	37 56 16	50 41 44	27 12 33	18 36 16	74	00 -04 19	07 06 01	09 17 12	08 12 -01	-13 -02 -11	85
8. "Busy," Cluttered Classroom	-02 -26 00	05 03 -07	12 22 -13	-20 -16 -43	-09 10 -25	86	-12 -19 02	02 -40 38	09 46 -01	-07 04 -22	-15 17 -34	73
9. Students Compliant, Obedient	27 -04 36	23 24 16	23 -19 33	12 -21 34	09 -84 20	94	12 25 05	05 31 -22	10 14 14	09 -06 21	-12 -27 -04	94
10. Teacher Gives Overly Explicit, Repetitious Directions	-12 -07 -21	00 13 -13	-23 03 -51	-53 -62 -47	-37 -50 -45	74	-18 -17 -08	-17 -21 -16	-16 -03 -15	-03 -18 08	14 -34 32	76

Table 3. (Cont'd)

	Word Knowledge (n=24-28)	Word Discrimination (n=24-28)	Reading (n=24-28)	Arith. Computation (n=24-28)	Arith. Reasoning (n=18-20)	Rater Agreement	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT		Total L H	Total L H	Total L H	Total L H	Total L H	
41. Well Established Routines Minimize Interruptions; Room Runs "Automatically"	29 -01 34	22 32 07	27 -01 26	06 -27 25	08 -83 17	82	13 40 05	13 58 -11	18 35 12	20 29 16	-07 19 -05	87

[1] High inference ratings on 13-point scales (first 3 variables) or 5-point scales (all other variables) made by two observers who had each observed the teacher, averaged across teachers.

[2] 1972 data were divided between Title I (n=13) and non-Title I (n=18) schools; 1973 data were divided into Low SES (n=13) and High SES (n=15) sets by splitting at the median on school SES scores obtained from the school district. In each data set, the r for the total group is on top, the r for Title I/Low SES at lower left, and the r for non-Title I/High SES at lower right. Correlations underlined once are statistically significant at $p \leq .10$; correlations underlined twice are statistically significant at $p \leq .05$.

[3] Agreement data reflect percent agreement within 2 points on the first 3 variables and within 1 point on all other variables by two raters who each had observed the teacher.

Table 4. Correlations between Percentage Estimate Variables[1] and Residual Gain Scores for Total Group, Title I and Non-Title I Schools for Year 1 (1972) and for Total Group, Low and High SES Schools for Year 2 (1973) (decimal points omitted).[2]

Percentage Estimate Variables	Word Knowledge (n=22-31)	Word Discrimination (n=22-31)	Reading (n=22-31)	Arith. Computation (n=22-31)	Arith. Reasoning (n=15-22)	Rater Agreement[3]	Word Knowledge (n=28)	Word Discrimination (n=28)	Reading (n=28)	Arith. Computation (n=28)	Arith. Reasoning (n=23)	Rater Agreement[3]
	Total TI NT	Total TI NT	Total TI NT	Total TI NT	Total TI NT		Total L H	Total L H	Total L H	Total L H	Total L H	
A. Time Utilization												
1. % Total Time Structured by Teacher	-09 11 -19	09 18 03	-30 -10 -43	-21 -09 -30	-16 -02 -20		-07 00 -06	07 01 21	-08 -31 00	-10 -17 00	-08 01 -07	
2. % Structured Time In Language Arts	-04 -50 14	-08 -34 07	02 -26 17	03 -15 15	17 -06 21		-16 11 -27	-08 24 -21	-38 -31 -45	-51 -19 -75	-65 -44 -70	
3. % Structured Time In Math	24 13 25	05 -10 -08	36 21 34	32 25 44	25 36 29		-25 -27 -19	-34 -37 -29	-08 -19 -11	16 15 16	-03 -15 04	
4. % Structured Time In Art	30 -04 39	12 -25 24	43 -09 58	25 07 34	45 42 46		13 -01 32	10 02 22	35 25 30	17 02 31	21 02 38	
5. % Structured Time In Spelling	-01 09 -09	10 -08 15	-10 -21 -11	-13 17 -36	-21 01 -30		-02 08 -21	-13 01 -35	-23 -38 -09	-42 -46 -38	-45 -84 -57	
6. % Structured Time In Reading Groups	-16 38 -33	-09 54 -34	-22 39 -40	-05 52 -42	-33 39 -43		-07 -25 -02	04 -14 13	-04 08 03	24 11 43	36 44 32	
7. % Structured Time In Social Studies	-05 -05 -10	09 10 01	04 26 -09	01 -43 14	01 -59 05		-17 01 -23	-08 28 -23	-04 -02 -14	-05 44 -46	-28 22 -37	

Table 4. (Cont'd)

	Word Knowledge (n=22-31)		Word Discrimination (n=22-31)		Reading (n=22-31)		Arith. Computation (n=22-31)		Arith. Reasoning (n=15-22)		Rater Agreement			Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement		
	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Both	One	Neither	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Both	One	Neither
8. % Structured Time in Transitions	09 -02 16		03 -08 13		-05 -24 06		-01 -15 11		12 29 14					16 -01 34		16 04 31		-16 -25 10		22 37 00		26 59 -05			
9. % Structured Time in Morning Routine	-09 02 -13		-14 -26 -08		-03 13 -09		02 32 -19		-17 28 -27					18 01 34		-10 -38 04		30 30 23		-01 -7 07		12 -12 21			
10. % Structured Time in Special Activities	-09 -03 -08		-03 02 04		-25 -19 -23		-29 -59 -02		-12 -48 -06					37 57 30		31 30 35		22 44 10		03 -11 14		18 -07 29			
B. Methods Used to Call for Attention																									
1. Says Nothing, Waits For Quiet	19 -05 27		29 22 26		25 -27 45		-09 -45 17		-03 -77 07		21	16	15	17 17 25		13 40 02		24 17 26		16 22 15		-01 04 06	32	8	36
2. Raps Desk Lightly, Uses Normal Voice	05 -35 31		08 -07 26		15 27 13		20 16 26		22 -05 25		1	16	35	-12 -05 -12		-25 -12 -28		05 23 00		07 11 07		02 -24 08	2	11	93
3. Gimmick (light flick, bell, clicker)	-25 -- -36		-10 -- -22		-29 -- -46		-20 -- -34		-17 -- -19		5	8	39	-17 -- -19		-05 -- -04		-06 -- -08		20 — 24		09 -- 14	7	8	86
4. Raises Voice Over the Din	-14 -25 -06		-26 -32 -14		-18 -17 -11		08 07 12		14 68 10		22	22	8	18 18 03		11 -12 16		00 07 06		01 -04 -03		17 -04 07	25	11	47
5. Raises Voice and Singles Out Individuals	-06 -03 -07		-05 -07 -03		-06 -12 -02		-14 -17 -12		-07 38 -12		12	23	17	04 00 05		03 13 -07		-07 -04 -08		-28 -35 -25		-21 -15 -27	33	11	31

Table 4. (Cont'd)

	Word Knowledge (n=22-31)		Word Discrimination (n=22-31)		Reading (n=22-31)		Arith. Computation (n=22-31)		Arith. Reasoning (n=15-22)		Rater Agreement		
	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Both	One	None
6. Shouts, Becomes Angry, or Scolds Class	03 / 42	- / -	-09 / 06	- / -	02 / 45	- / -	17 / 39	- / -	04 / 32	- / -	5	5	42
7. Shouts, Becomes Angry, or Scolds Individuals	-07 / 40	- / -	-12 / 04	- / -	-12 / 23	- / -	10 / 36	- / -	-02 / 20	- / -	5	6	41
8. Whispers or Speaks Softly to Nearby Pupils (at first)	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	0	5	47
9. Other (Includes any method not listed above)	09 / -03 12	- / -	-12 / -19 -10	- / -	05 / 41 -05	- / -	17 / 42 07	- / -	10 / 57 07	- / -	3	12	37
C. Estimated % of Students Paying Attention	18 / 13 16	- / -	23 / 47 -01	- / -	23 / 08 21	- / -	03 / -23 21	- / -	07 / -25 15	- / -	50	0	0
D. What Does the Teacher Do When a Child Doesn't Understand?													
1. Stops What She's Doing, Explains	-15 / -32 -16	- / -	-02 / 01 -11	- / -	-24 / -55 -22	- / -	-45 / -58 -41	- / -	-45 / -43 -49	- / -	29	11	7
2. Delays Child then Explains Later	29 / -66 52	- / -	03 / -44 17	- / -	20 / -41 36	- / -	11 / -42 35	- / -	39 / -55 46	- / -	21	16	4

	Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement		
	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Both	One	None
6. Shouts, Becomes Angry, or Scolds Class	-18 / -12 -22	- / -	03 / -28 24	- / -	-30 / -20 -38	- / -	-18 / 19 -45	- / -	-04 / 38 -24	- / -	14	4	76
7. Shouts, Becomes Angry, or Scolds Individuals	-18 / 10 -17	- / -	-02 / -38 16	- / -	-20 / 08 -30	- / -	-16 / 12 -26	- / -	03 / 40 -03	- / -	14	9	71
8. Whispers or Speaks Softly to Nearby Pupils (at first)	-25 / - -08	- / -	-08 / - 18	- / -	-02 / - 17	- / -	-14 / - 19	- / -	-27 / - -11	- / -	5	5	93
9. Other (Includes any method not listed above)	-02 / - -	- / -	-18 / - -	- / -	-06 / - -	- / -	11 / - -	- / -	10 / - -	- / -	1	6	100
C. Estimated % of Students Paying Attention	28 / 29 35	- / -	19 / 46 -02	- / -	26 / 05 43	- / -	14 / -04 37	- / -	-03 / -31 18	- / -	54	0	0
D. What Does the Teacher Do When a Child Doesn't Understand?													
1. Stops What She's Doing, Explains	03 / 40 -42	- / -	16 / 42 -17	- / -	13 / 45 02	- / -	14 / 33 -10	- / -	-05 / 31 -33	- / -	42	12	12
2. Delays Child then Explains Later	08 / -60 44	- / -	-16 / -35 -03	- / -	11 / -26 18	- / -	20 / -29 48	- / -	31 / -47 60	- / -	31	18	28

Table 4. (Cont'd)

	Word Knowledge (n=22-31)		Word Discrimination (n=22-31)		Reading (n=22-31)		Arith. Computation (n=22-31)		Arith. Reasoning (n=15-22)		Rater Agreement		
	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total Ti	Total NT	Both	One	None
3. Delays, but then Fails to Follow up	-23 -30	-20	-13 -23	-07	-15 03	-20	05 33	-11	03 20	02	3	10	28
4. Asks Another Child to Explain	17 58	-02	41 59	27	21 17	18	03 06	01	11 83	03	8	22	10
5. Scolds Child for Not Understanding	-01 26	—	-13 -05	—	06 47	—	16 33	—	03 03	—	3	10	27
6. Encourages Child but Gives No Help	-20 —	-31	-15 —	-42	08 —	-08	22 —	16	-05 —	-04	3	14	23
7. Refuses Help ("You're on your own.")	08 51	-13	-03 10	-04	04 35	-08	22 26	25	16 21	19	2	13	25
8. Sends Child to Aide or Other Adult	— —	—	— —	—	— —	—	— —	—	— —	—	0	2	38
9. Other (includes any method not listed above)	— —	-08	— —	-38	— —	-23	— —	-02	— —	-18	0	4	36

	Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement		
	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Both	One	None
3. Delays, but then Fails to Follow up	-02 -06	-05	-04 -20	05	-04 11	-11	14 19	07	18 25	10	10	7	81
4. Asks Another Child to Explain	00 04	01	-07 -10	-02	00 -36	13	-15 -49	13	-25 -64	-15	14	25	55
5. Scolds Child for Not Understanding	-02 -38	30	04 -45	55	07 05	12	06 22	-13	26 43	20	4	16	84
6. Encourages Child but Gives No Help	26 -08	52	18 12	23	-04 -70	24	-04 -39	24	17 -43	42	8	22	70
7. Refuses Help ("You're on your own.")	-08 -13	-16	-06 -37	30	-16 -11	-26	-06 13	-43	14 36	-11	3	11	91
8. Sends Child to Aide or Other Adult	12 -08	—	18 02	—	-03 -14	—	-10 -32	—	04 -37	—	0	10	98
9. Other (includes any method not listed above)	— —	—	— —	—	— —	—	— —	—	— —	—	0	1	107

Table 4. (Cont'd)

	Word Knowledge (n=22-31)		Word Discrimination (n=22-31)		Reading (n=22-31)		Arith. Computation (n=22-31)		Arith. Reasoning (n=15-22)		Rater Agreement			Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement		
	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Both	One	None	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Both	One	None
E. Teacher Goes to Child's Desk to Give Help, Doesn't Stay at Desk	19	45 09	28	39 20	08	26 -03	22	53 02	15	67 09	50	0	0	-13	32 -43	-23	36 -68	-28	-09 -43	-14	21 -44	-21	03 -31	52	2	2
F. What Teacher Does When Child Is Stuck While Reading In Reading Group																										
1. Gives Word	11	12 17	01	-10 16	13	-08 31	34	29 40	35	79 34	26	3	0	-16	29 -39	-02	-04 02	-21	-15 -28	-29	-31 -27	-07	-13 -05	42	12	12
2. Gives First Sound or Syllable	10	11 06	01	36 -21	03	17 -09	08	-06 14	-08	-67 -03	12	9	8	09	18 -03	10	54 -35	-09	13 -21	18	39 -05	04	44 -18	18	25	47
3. Child Starts Sentence or Paragraph Over	19	18 22	-07	-10 -05	-09	-37 02	01	-13 09	09	19 09	0	12	17	35	-30 71	36	-12 64	39	-20 61	30	31 30	40	36 41	2	15	89
4. Gives Context Clue or Definition	-24	-30 -23	-09	-20 -04	-23	-12 -29	-39	-17 -52	-29	-94 -22	4	5	20	20	19 20	06	15 -05	13	14 17	16	32 -01	-16	00 -24	13	32	50
5. Asks Another Child to Give Word	-32	-14 -44	04	-07 00	-26	-13 -40	-48	-29 -61	-51	-02 -56	15	7	7	03	08 03	-10	-12 -06	14	05 17	-07	-25 07	-17	-57 -05	25	22	36

Table 4. (Cont'd)

	Word Knowledge (n=22-31)		Word Discrimination (n=22-31)		Reading (n=22-31)		Arith. Computation (n=22-31)		Arith. Reasoning (n=15-22)		Rater Agreement		
	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Total TI	Total NT	Both	One	None
6. Gives Clue Unrelated to Sound or Meaning ("It's one of our new words.")	30 -40 45		04 -36 18		33 -10 46		09 -21 21		26 -95 35		1	7	21
7. Tells Child to Skip, Go to Next Word	— —		— —		— —		— —		— —		0	2	27
8. Other (includes any method not listed here)	— —		— —		— —		— —		— —		0	2	27

	Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement		
	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Total L	Total H	Both	One	None
6. Gives Clue Unrelated to Sound or Meaning ("It's one of our new words.")	-12 -72 20		-24 -59 -04		-12 -31 -07		01 -31 22		04 -13 09		6	20	76
7. Tells Child to Skip, Go to Next Word	— —		— —		— —		— —		— —		0	4	104
8. Other (includes any method not listed here)	— —		— —		— —		— —		— —		1	12	94

[1]Two observers who each had observed the teacher estimated percentages for each appropriate category; scores were then obtained by averaging.

[2]1972 data were divided between Title I (n=13) and non-Title I (n=18) schools, 1973 data were divided into Low SES (n=13) and High SES (n=15) sets by splitting at the median on school SES scores obtained from the school district. In each data set, the r for the total group is on top, the r for Title I/Low SES at lower left, and the r for non-Title I/High SES at lower right. Correlations underlined once are statistically significant at $p \leq .10$; correlations underlined twice are statistically significant at $p \leq .05$.

Table 4. (Cont'd)

Word Knowledge (n=31)		Word Discrimination (n=31)		Reading (n=31)		Arith. Computation (n=31)		Arith. Reasoning (n=22)		Rater Agreement
Total		Total		Total		Total		Total		
TI	NT	TI	NT	TI	NT	TI	NT	TI	NT	

Word Knowledge (n=28)		Word Discrimination (n=28)		Reading (n=28)		Arith. Computation (n=28)		Arith. Reasoning (n=23)		Rater Agreement
Total		Total		Total		Total		Total		
L	H	L	H	L	H	L	H	L	H	

[3]Rater agreement data reflect category usage by observers. The "Both" column indicates the number of times that both raters checked the category in rating a teacher; the "One" column indicates the number of times that one rater checked and the other didn't; the "None" column indicates the number of times that neither rater used the category in rating a teacher. No agreement data appear for time utilization scores because these were computed directly from observation sheets, and agreement was nearly perfect. Differences in totals sometimes occur in the 1972 data because raters were not always able to estimate with any confidence.

Table 5. Correlations between Lesson Presentation Variables[1] and Residual Gain Scores on the Metropolitan Achievement Test (averaged across four years) for Total Group in Year 1 (1972) and for Total Group, Low and High SES Schools in Year 2 (1973) (decimal points omitted).[2]

	Year 1					Year 2				
DESCRIPTION	WK	WD	R	AC	AR	WK	WD	R	AC	AR
1. Uses Advance Organizers						10 -32 37	22 01 39	23 02 28	12 44 -02	00 57 00
2. Review of Old Material	-50	-04	-36	-43	-59	11 -44 50*	-06 -43 21	41** 03 65**	09 -19 32	25 -03 33
3. Presentation of New Material	-41	-28	-48	-48	-68*	05 -12 22	15 23 13	-14 -49*-03	-14 -17 -12	-02 07 00
4. Practice of New Material	53	55*	41	42	37	17 -11 38	25 -04 49*	21 -18 48*	05 -14 23	03 -43 18
5. Summarizing Review	-23	-05	-13	03	-04	14 -72** 58**	02 -53* 33	24 -20 37	08 -06 17	15 -09 26
6. Teacher-afforded Evaluation	38	11	53	39	46	09 -64** 46*	03 -45 30	15 -48* 28	-07 -11 -02	04 02 11
7. Elicited Student Self-evaluation	00	-04	19	30	36	23 -14 45*	19 -12 38	12 08 11	17 26 14	22 20 27
8. Instructions for Follow-up	05	08	-04	00	-03	-06 -47 33	-10 -33 16	10 -08 17	15 39 -02	00 39 -09
9. Independent Activity	39	05	22	13	59	-06 -12 01	13 17 15	07 -20 14	06 15 04	-21 -09 -21

Table 5. Continued

DESCRIPTION	Year 1 WK	WD	R	AC	AR	Year 2 WK	WD	R	AC	AR
10. Dead Spots	-58*	-51	-71**	-45	-61	-16 -31 -09	-05 -44 28	-04 10 -10	-08 17 -32	-04 21 -17
Methods Categories										
11. Lecture	-31	-17	-16	00	02	-16 -16 -12	-19 09 -37	-12 -06 -20	-26 -14 -36	-23 -07 -24
12. Demonstration	40	35	43	59*	52	19 -05 38	36* 37 40	23 12 28	25 51* 07	08 61* 03
13. Focused Discussion	30	27	44	33	34	-23 -59** 01	-23 -34 -16	-22 -44 -15	-31* -50*-17	-04 -25 06
14. Unfocused Discussion	-39	-14	-19	03	-07	07 19 -30	11 15 -08	-03 46 -40	-02 23 -59**	-08 -06 -37
15. Silent Reading	56*	35	63*	25	50	04 -41 30	09 -13 24	22 08 25	30 18 39	24 67**16
16. Oral Reading	06	03	-11	-17	-19	24 30 17	02 -01 00	-03 09 -06	-22 -44 -04	09 -28 19
17. Drill	-55*	-11	-50	-63	-73**	11 -21 29	-07 -28 06	21 -31 30	09 -19 24	22 -30 41

Table 5. Continued

DESCRIPTION	Year 1 WK	WD	R	AC	AR	Year 2 WK	WD	R	AC	AR
8. Problem-solving	12	-27	-07	-14	04	32* -28 70**	20 -04 42	57** 27 65**	37* 57**38	34 50 49
Materials Categories										
9. Standardized	-19	-06	-14	-23	-43	03 -27 33	-15 -39 09	05 -21 22	-08 -51* 51*	12 -18 41
10. Teacher Created	46	38	28	17	13	25 23 32	25 44 19	35* -19 55**	23 -06 45*	18 -11 37
11. A/V Aids	38	53	26	30	45	-17 -17 -11	12 18 15	01 13 -07	08 53*-26	-03 58*-17
12. Games/Activities	44	51	59*	58*	79**	-26 -22 -20	-16 -06 -13	01 11 -05	-14 -26 -08	-24 -12 -17
13. Learning Centers	-25	-35	-14	05	17	-01 38 -28	08 16 05	-05 19 -18	09 21 00	-22 -08 -17
Degree of Individualization										
14. Groups	18	35	10	00	-13	03 -07 19	15 09 29	-13 -30 -10	-02 02 -03	07 42 -04

Table 5. Continued

DESCRIPTION	Year 1 WK	WD	R	AC	AR	Year 2 WK	WD	R	AC	AR
5. Pairs	-21	-43	-30	-12	05	-08 -39 04	-10 -34 00	05 -16 17	07 -35 38	16 -63* 35
6. Individuals	56*	20	65**	32	46	04 06 1.	04 -07 17	38** 44 36	10 33 00	-01 11 10
7. Uses non-patterned turns	-47	-15	-57*	-64**	-70**	-56** -72**-43	-26 -12 -38	-20 -33 -21	07 -04 17	-05 -09 -02

[1]In Year 1, these variables were measured with a low inference system in the classrooms of 10 teachers, so that data are available only for the Total Group. In Year 2, these variables were assessed with a high-inference rating system so data are available for Total Group (the top centered coefficient), Low SES (the lower left coefficient), and High SES (the lower right coefficient).

[2]Probability values are indicated by asterisks. $p > .10$ where none appear; $.10 > p > .05$ where one asterisk appears; and $p < .05$ where two asterisks appear.

Rater agreement, within one point on the five point scale, for the second year high inference rating system ranged from 50 to 100% with a mean agreement of 90%.

Table 6. Correlations between Teacher Process Variables from the Expanded Brophy-Good Dyadic Observational System and Student Residual Gain Scores (Averaged across Four Years) on the Metropolitan Achievement Tests (Separately by years).[1]

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
A. Selecting Respondents to Questions															
1. % Preselects Respondent before Asking Questions	-19	-10	05	-01	-20	-30	-23	-11	-17	-29	-47	-23	-43	-30	-43
	-13 -26	-04 -17	13 -00	45 -35	45 -34	-07 -40	-22 -34	19 -25	-07 -22	04 -32	11 -63	-06 -34	04 -61	45 -61	68 -54
	07	-03	15	10	29	56	36	55	14	35	50	19	50	24	42
	-31 20	-52 13	09 14	07 13	33 34	31 71	-20 66	43 59	-23 33	-05 43	46 60	-05 36	22 54	-14 54	-05 62
2. Calls on Non-Volunteer	14	11	-01	-05	07	15	10	10	11	03	01	-08	11	13	16
	40 08	29 05	14 -03	13 -17	-16 -07	25 21	14 24	27 12	38 -19	11 01	46 -18	30 -29	11 -21	29 00	37 13
	23	16	29	18	26	21	11	14	12	25	17	-05	25	12	16
	30 23	-09 38	15 39	-04 39	22 29	21 16	25 -03	-09 28	-18 33	24 20	22 12	-06 -04	17 34	03 25	19 13
3. Calls on Volunteer	22	30	16	13	48	-02	04	-04	-06	10	25	34	26	-04	03
	-27 39	-15 50	-62 44	-55 58	-28 56	-22 03	-05 -05	-32 03	-37 35	-27 24	-36 48	04 44	-35 50	-56 34	-93 17
	-11	-22	-11	-14	-24	-24	-22	-13	-07	-33	-20	-02	-27	-24	-24
	-16 -04	-03 -33	02 -18	-06 -19	-30 -24	-32 -17	-19 -22	-02 -21	23 -29	-04 -36	-32 -11	04 -04	-47 -23	-30 -21	-35 -18
4. Student Calls out Answers	-26	-36	-20	-09	-22	10	-15	-07	-03	-02	-17	-28	-05	03	-02
	-04 -30	-13 -42	55 -39	23 -23	-03 -24	-10 -07	-15 -07	01 -04	-08 02	05 -03	-14 -16	-45 -12	34 -15	28 -17	20 -08
	-21	08	-32	-11	-20	-20	-02	-24	-14	-08	-25	-05	-26	04	-13
	-12 -53	25 -21	-21 -50	09 -48	03 -43	08 -25	-07 01	04 -29	05 -18	-40 -03	-11 -41	07 -17	34 -42	51 -36	24 -31

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
B. Difficulty Level of Questions															
5. Process Questions/ Process + Product Questions	08 -42 12 -37 15 -41 -00 -40 -01 -68 11	10	-01	-08	04	18 -- 20 -- 09 -- 23 -- -04 -- -05	02	04	-16	-05	16 41 06 55 04 27 -05 36 08 67 -06	22	06	19	03
	-16 -27 -15 -10 -08 25 -24 11 -55 12 -21	-05	-04	-13	-03	34 46 39 20 42 -06 30 23 18 03 28	30	23	18	21	16 17 15 26 -09 -10 29 -37 -12 -31 03	08	13	-27	-07
6. Choice Questions/Process + Product + Choice	09 63 -05 62 -03 07 12 28 24 66 26	14	14	25	29	-21 -34 -16 -14 -01 10 -43 -10 -20 19 -12	-15	-17	-11	-00	-08 -30 16 -20 -13 -42 20 -60 32 -81 35	-20	-16	-20	01
	10 05 12 -02 -17 22 07 38 25 45 -02	-06	09	31	07	08 -18 16 -19 -00 -33 09 -37 01 -28 07	-08	-04	-13	05	42 25 59 02 44 02 39 08 26 -06 42	24	33	18	25
C. Quality of Children's Answers															
7. % Correct	-27 -56 -31 -60 -13 -40 -60 -14 -53 34 -44	-21	-33	-28	-27	-01 -03 -05 -02 09 -10 -06 11 -13 86 -10	09	-02	00	08	-05 29 -40 02 -08 35 -39 40 -31 90 -39	07	04	04	-08
	-07 69 -41 58 -41 51 -31 48 -04 16 -30	-07	03	11	-25	-19 30 -52 27 -25 -06 -40 06 -09 -01 -13	-04	-23	-03	-12	-30 -25 -34 -14 -05 -30 -28 14 -11 -10 -26	-12	-13	05	-23
8. % Part-Correct	11 07 11 -04 04 22 41 09 51 -76 49	04	36	36	39	02 -09 03 -06 -33 -22 -06 -57 -15 -65 -12	-21	-07	-29	-17	05 -34 15 -43 -03 -23 27 19 00 -01 -00	-11	16	07	-01
	-03 -05 -09 18 -04 -12 -27 -20 -62 -25 -46	08	-22	-40	-33	22 46 17 30 21 24 06 42 -13 32 -06	21	11	07	-01	28 06 45 03 52 27 33 20 07 -04 30	32	25	12	19
9. % Wrong	15 32 15 43 -09 03 24 -25 43 -35 31	11	08	05	14	01 -10 09 -17 17 12 15 16 33 -35 27	01	12	23	11	-02 -39 44 -04 27 -29 31 -60 36 -82 46	-01	-09	-19	06
	19 -44 49 -50 21 -17 39 -38 33 -12 47	02	07	05	35	23 -40 77 -43 36 14 64 06 39 08 50	00	40	22	37	27 33 19 30 -15 14 09 -39 18 -27 37	09	01	-18	15

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
10. % "Don't Know"	24	18	45	07	15	14	09	27	24	11	09	06	10	06	03
	14 27	15 18	55 42	-07 15	-37 25	-- 34	-- 21	-- 42	-- 04	-- 15	14 06	10 02	-19 18	11 05	-19 09
	00	00	-01	24	19	-21	-17	-04	06	05	-10	03	09	28	25
	-20 29	-15 23	-03 10	27 30	16 26	-36 -22	-43 -02	48 -30	32 -22	36 -18	-40 64	-15 41	09 45	40 06	44 14
11. % No Response	08	12	02	16	-09	-05	-05	-14	-17	-21	09	-08	-04	18	06
	47 10	44 20	41 12	68 -21	75 -22	19 -19	23 -16	02 -20	-24 -12	-74 -24	29 08	19 -17	02 07	25 13	-20 12
	-08	07	00	-08	27	-08	-03	-20	-31	-25	10	-12	04	-04	05
	-64 31	-57 64	-63 41	-39 20	-04 40	-18 -20	01 -23	-31 -14	-49 -26	-35 -50	10 07	-15 -17	04 20	01 -05	31 -14
D. Teacher Reactions to Correct Answers															
12. Praise	23	-01	25	03	22	-07	-09	12	-05	-11	-04	-06	-19	-02	-12
	-05 28	-24 04	-16 35	-18 12	02 24	-24 -01	-35 02	03 16	-02 -07	-77 -03	36 -21	07 -16	06 -34	11 -09	24 -19
	11	-10	20	05	17	18	04	25	21	27	-07	-16	15	13	17
	01 18	-11 -08	-02 23	-16 14	-17 25	-01 27	11 03	-03 31	25 21	12 28	-22 -03	20 -23	10 12	42 06	47 17
17. Criticism	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
	--	--		--	--	34	22	34	22	33	--	--	--	--	--
	-- --	-- --	- -	-- --	-- --	-- 43	-- 33	-- 32	-- 36	-- 46	-- --	-- --	-- --	-- --	-- --
13. Failure to Give Feedback	-06	-19	-02	12	13	-17	-17	02	18	09	-05	-09	18	06	30
	-08 -05	-25 -16	07 -04	-07 24	-75 20	-- -14	-- -10	-- 09	-- 8	-- 12	-- 11	-- -05	-- 35	-- 26	-- 35
	23	09	-11	-01	00	20	01	13	-05	-08	30	06	04	-10	06
	40 13	44 -17	10 -20	-21 14	-26 05	-- -05	-- -14	-- -04	-- 02	-- -16	57 --	19 --	36 --	-20 --	-27 --

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
14. Process Feedback	03	-15	02	-07	19	31	15	24	13	37	17	-06	22	21	27
	35	28	45	18	32	31	22	44	34	37	08	22	27	33	34
15. New Question	11	11	-09	-10	05	08	00	-02	20	-02	-07	04	-16	08	-09
	23	12	24	09	12	09	21	-09	10	02	08	-13	00	-13	-07
E. Teacher Reactions to Part-Correct Answers															
16. Praise															
18. Criticism															
19. Failure to Give Feedback															

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
20. Process Feedback	10	10	35	00	11	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	-12	09	-07	-14	-32	11	20	07	24	02
21. Gives the Answer	08	06	-19	-20	-16	-14	-01	13	-00	-05	36	47	35	03	09
	-24	-16	00	27	22	57	63	45	37	27	40	27	34	-01	-15
22. Calls on Someone Else	14	22	19	08	14	02	09	08	22	31	-18	-06	-08	-05	04
	-11	-09	00	-16	-16	01	-20	18	-17	-10	41	46	21	07	29
23. Another Student Calls Out the Answer	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-18	00	-09	-10	-14	--	--	--	--	--	05	00	14	-05	-03
24. Repeats, Rephrases, or Asks New Question	29	23	03	48	43	-24	-25	-41	-45	-41	-15	-19	-29	-08	-22
	14	09	-05	-09	-03	-15	-01	-04	-07	-18	-55	-55	-26	15	12

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
25. Repeats Question	-12	-14	-31	24	05	-30	-20	-42	-51	-54	08	-12	-25	11	11
	03	-05	-03	-03	08	34	41	26	25	38	-36	-31	-01	14	23
26. Rephrases or Gives Clue	43	45	29	24	41	-12	-21	-25	-18	-18	-15	02	01	-06	-14
	34	29	10	-06	-15	-28	-30	-35	-07	03	-33	-29	-21	12	07
27. Asks New Question	19	04	16	25	31	16	08	06	-09	-21	-38	-27	-30	-24	-37
	-26	-18	-18	-03	04	-06	05	14	-04	-19	-05	-20	-26	-22	-35
F. Teacher Reactions to Wrong Answers															
28. Praise															
29. Criticism															
	-02	-09	24	14	34	13	09	12	-08	-02	-14	-04	02	03	16

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
30. Failure to Give Feedback	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
	-09	-07	-08	12	15	--	--	--	--	--	-16	25	-07	05	-09
	-46 --	-33 --	-19 --	11 --	00 --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
31. Process Feedback	-21	-22	-12	-18	-07	13	05	27	33	26	10	-05	25	11	35
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
	-31	-05	-13	05	-18	-34	-09	-15	-05	-29	13	-03	03	11	06
	-09 -44	11 -14	17 -26	33 -13	30 -29	-42 -31	-21 -03	-39 -08	-17 03	-22 -36	26 13	35 -12	-07 -01	-30 30	-24 16
32. Gives the Answer	12	24	40	34	27	03	-02	06	21	05	-22	-27	-11	05	-05
	-- 03	-- 21	-- 27	-- 34	-- 25	02 --	-10 --	15 --	39 --	-- --	-23 -30	-39 01	03 -10	14 -08	11 -19
	-35	-20	-42	-23	-30	18	09	18	08	08	00	08	05	14	-06
	-18 -40	18 -34	-23 -51	36 -51	38 -43	32 16	-11 15	-06 21	-12 15	-19 14	03 -03	-04 30	01 09	04 38	-20 18
33. Calls on Someone Else	11	22	02	-02	16	-13	-08	-03	-13	-02	30	41	20	-11	-06
	-20 18	-03 30	-64 20	-31 11	-- 26	-25 -17	-31 -12	-16 -11	-36 -04	-- -06	08 37	28 41	-41 39	-37 06	-72 -00
	16	19	09	-23	-12	-03	09	04	-03	-06	37	22	12	-28	-04
	26 13	13 25	01 12	-55 01	-72 06	-29 15	-02 17	-14 10	03 -07	-13 01	20 50	16 27	-26 26	-43 -16	-19 05
34. Another Student Calls Out the Answer	-21	-26	-20	-03	-22	10	-08	11	30	21	-12	-28	-08	16	04
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-17 --	-64 --	-02 --	32 --	31 --
	-13	03	-29	-08	-15	04	07	-11	-24	-21	-04	00	-26	-06	05
	-04 --	28 --	-20 --	04 --	-11 --	-- --	-- --	-- --	-- --	-- --	32 --	7 --	14 --	11 --	21 --

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
35. Repeats, Rephrases, or Asks New Question	11	11	-08	01	-10	-03	-08	-08	06	-08	-06	-01	-07	12	15
	23 10	54 -03	44 -24	21 -08	-- -10	-01 02	-20 16	12 -06	32 -11	-- -07	08 -14	33 -22	39 -31	16 09	28 13
	17	-07	31	36	35	-07	-20	-13	11	04	-28	-30	-03	13	08
	04 25	-23 03	22 36	34 37	62 29	24 -36	21 -50	23 -22	17 06	34 -18	-32 -30	-17 -50	19 -09	31 -12	35 -10
36. Repeats Question	-12	-03	-21	-33	-50	-03	-08	-05	-03	-08	-20	-08	-29	-18	-11
	-17 -17	16 -15	-30 -30	-17 -53	-- -53	-15 03	-28 06	-05 -03	05 -09	-- -20	09 -40	22 -23	-02 -47	-02 -38	27 -24
	14	10	18	14	19	-24	-17	23	27	14	-44	-40	-24	-01	01
	09 20	06 15	-27 32	03 23	06 27	-50 -07	-29 -10	24 24	44 15	60 -02	-61 -26	-40 -48	-15 07	00 00	25 -18
37. Rephrases or Gives Clue	30	17	13	20	22	07	03	10	15	06	02	02	01	16	26
	-- 28	-- 12	-- 02	-- 23	-- 23	22 17	17 24	41 13	32 05	-- 13	03 -03	35 -15	65 -19	-04 23	-03 28
	04	-15	19	29	26	08	-10	-19	04	04	-03	-07	-09	13	04
	-02 05	-19 -16	37 16	42 18	63 15	38 -32	29 -54	02 -28	-06 12	-01 -12	16 -31	14 -38	24 -30	31 -19	05 00
38. Asks New Question	-06	01	-09	10	06	-14	-09	-27	-02	-07	07	03	15	16	-09
	13 --	34 --	44 --	30 --	-- --	-- -26	-- 16	-- -31	-- -19	-- -04	01 06	-01 -00	20 09	49 -02	33 -16
	20	-06	24	26	36	-16	-11	-32	-33	-37	-03	-08	16	18	14
	02 31	-31 10	22 26	02 42	31 54	-- -38	-- -22	-- -59	-- -46	-- -36	-11 --	-04 --	38 --	32 --	37 --
G. Teacher Reactions to "I Don't Know" or No Response															
39. Criticism	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
	--	--	--	--	--	40	38	46	20	23	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- 60	-- 57	-- 45	-- 20	-- 29	-- --	-- --	-- --	-- --	-- --

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
40. Failure to Give Feedback	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --
	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-16 --	04 --	-09 --	16 --	-08 --
41. Gives the Answer	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-- -- -- --	-16 --	-21 --	-05 --	-10 --	-38 --	19 --	15 --	26 --	13 --	13 --
	06 --	-14 --	15 --	13 --	-08 --	05 --	-12 --	01 --	-23 --	-03 --	-18 24	-21 -35	-03 -01	17 -25	-03 31
	13 --	-10 --	15 --	25 --	01 --	11 --	-09 --	-01 --	-17 --	-14 --	-27 24	12 --	19 -05	-- --	-- --
42. Calls on Someone Else	17 -28	04 28	25 -04	17 02	06 01	-15 -55	-10 -06	-26 -85	-08 11	-05 -29	17 -22	09 38	23 -26	10 25	07 --
	-37 31	03 24	-63 14	20 20	16 25	-37 05	-15 --	-08 -12	04	09	-13	-09	10 -34	09 53	17 -07
	28 -65	48 -62	36 -58	31 --	13 --	-41	23 -47	59 -08	11 -42	13 -49	15 --	-- --	30 01	16 --	13 --
43. Another Student Calls Out the Answer	-45 --	-22 --	-44 --	-50 --	-59 --	-- --	-- --	-- --	-- --	-- --	-19 --	03 --	-12 --	-16 --	-21 --
	-44 -08	-15 -75	-49 02	-41 -31	-63 -20	00 17	08 --	-16 14	-02 --	-33 08	-07 46	03 -45	-19 18	-05 -07	-15 42
	-73 03	-83 26	-72 --	-- --	-- --	-- --	-- --	23 --	46 --	-- --	-42 23	-42 -34	-15 -15	-- --	-- --
44. Repeats, Rephrases, or Asks New Question	38 17	21 10	11 34	-01 -07	24 26	07 49	20 -11	-07 64	-10 07	-15 01	-02 -21	02 27	-28 -01	-01 26	16 -43
	53 -34	18 -12	26 -11	-24 -03	18 -40	-04 -16	-07 --	-10 -03	-10 24	02 -34	-04 -20	29 --	32 -08	-14 -03	07 -17
	-11 28	23 13	30 20	29 61	24 24	44 -66	-11 -22	32 -09	35 -19	-- --	-23 45	-08 41	-25 66	-34 --	-- --

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
45. Repeats Question	19	-03	-14	-11	28	-01	-08	14	-17	-21	-17	-29	-40	-29	-11
	07 40	-07 16	-37 13	-38 25	-24 31	-- --	-- --	-- --	-- --	-- --	-36 00	-38 -27	-61 -34	-56 10	-- 10
	-14	-37	-11	10	20	-05	06	-25	-02	-14	-27	-19	06	23	28
	-14 -22	-45 -39	29 -24	01 15	26 10	12 -41	46 -52	-29 -31	06 -16	52 -47	-52 -04	-25 -18	13 11	42 -04	72 -03
46. Rephrases or Gives Clue	24	24	22	01	09	09	09	-08	05	-16	05	19	-04	16	29
	-- --	-- --	-- --	-- --	-- --	27 --	42 --	-03 --	08 --	-- --	11 17	35 39	10 04	26 19	-- 27
	-04	-07	21	17	24	-05	-17	06	17	10	15	-05	-08	-12	-25
	-16 06	04 -07	20 18	46 09	65 24	-- -19	-- -39	-- -08	-- -01	-- 04	37 -17	-03 -21	49 -29	10 -47	-05 -64
47. Asks New Question	-03	06	11	-08	-33	03	32	-14	-11	05	19	24	14	24	29
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
	-01	05	28	18	05	12	-07	-16	-04	04	14	23	-21	-14	17
	-25 10	-49 25	04 29	00 29	30 07	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
H. Teacher Reaction to DK															
48. Criticism	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
49. Failure to Give Feedback	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
50. Gives the Answer	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	--	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
51. Calls on Someone Else	10	56	16	42	39	-46	-13	-05	04	01	-08	16	25	-06	23
	-- 22	-- 67	-- 23	-- 64	-- 39	-58 -37	-43 -01	-39 01	-33 20	-- 00	-49 29	-37 63	-29 56	-49 71	-45 63
52. Another Student Calls Out the Answer	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
53. Repeats, Rephrases or Asks New Questi--	-04	-40	-13	-40	-55	-09	-09	-25	-29	-46	--	--	--	--	--
	-- -28	-- -70	-- -23	-- -80	-- -71	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
54. Repeats Question	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
55. Rephrases or Gives Clue															
56. Asks New Question															
I. Teacher Reaction to No Response															
57. Criticism						23	25	23	12	05					
58. Failure to Give Feedback															
59. Gives the Answer	06	-11	18	15	-09	04	-11	05	-23	-02	-20	-14	01	21	-14
	13	-06	17	27	-01						13	-38	-06	-14	26	-18	24	16	19	-25

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
60. Calls on Someone Else	19 19 14	20 13 19	-09 -07 -05	-19 -12 -29	-11 -57 -04	-09 -38 26	07 -44 61	10 -07 12	-11 -39 12	-10 -62 17	-19 -09 53	10 03 24	10 -75 43	-25 -74 31	-09 -71 27
61. Another Student Calls Out	-44 -10 --	-16 00 --	-48 -17 --	-38 07 --	-52 24 --	-02 13 --	06 10 --	-17 08 --	-02 26 --	-28 43 --	-06 45 -42	01 17 -10	-17 44 -42	-02 23 -27	-05 -14 -02
62. Repeats, Rephrases, or Asks New Question	-10 -23 -01	-19 -38 -05	19 31 14	28 23 35	35 60 31	-04 23 -31	-13 43 -65	-18 -14 -20	10 28 -04	05 53 -16	-13 -25 -08	-09 -08 -22	02 42 -04	20 51 -23	14 68 -32
63. Repeats Question	-10 -11 -15	-30 -41 -29	-09 28 -21	15 02 21	25 20 19	-06 09 -43	04 40 -53	-25 -25 -33	00 11 -16	-09 53 -46	-24 -41 -02	-09 -09 -18	07 20 13	30 45 -03	27 62 -03
64. Rephrases or Gives Clue	-04 -22 09	-08 02 -08	22 28 18	21 51 12	26 68 27	-06 -- -15	-20 -- -39	09 -- -04	17 -- 05	12 -- 07	16 38 -13	-05 -03 -20	-07 48 -25	-14 06 -45	-27 -06 -62

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
65. Asks New Question															
	12	-21	33	-07	-06	11	-09	-17	-03	05	--	--	--	--	--
	-- 17	-- -23	-- 27	-- -14	-- 00	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
1. Teacher Reactions Combined Across All Response Opportunities															
65. Praise	15	-08	15	-04	14	-12	-12	07	-10	-17	-08	-09	-21	-05	-16
	-13 22	-33 -01	-26 27	-21 05	-02 16	-30 -09	-43 -02	-05 08	-00 -15	-64 -13	38 -26	07 -22	09 -39	11 -12	32 -23
	08	-13	16	05	14	14	00	21	19	22	-13	-22	09	09	12
	13 11	00 -15	09 16	-03 11	-01 20	05 19	16 -03	01 23	30 17	14 23	-29 -11	17 -29	05 05	46 01	48 11
66B. Criticism After All Incorrect Answers	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
	-03	-12	22	16	37	09	09	20	01	-02	14	14	22	07	27
	-51 27	-69 26	07 32	-13 39	22 46	-28 39	-22 36	26 23	-04 04	-08 00	-44 73	-32 66	-19 63	-17 37	-21 56
67. Failure to Give Feedback	-06	-17	-03	05	10	-17	-15	04	13	08	06	01	25	11	33
	-15 -03	-2 -14	01 -04	-25 22	-82 18	-40 -14	-49 -10	-35 10	07 16	-26 11	-26 16	02 -01	-- 34	-17 27	-21 38
	09	-02	-12	09	11	15	-06	12	-06	-05	22	06	-04	-09	06
	-12 18	-02 -15	-06 -15	-01 17	-01 08	34 -03	02 -17	54 -05	-18 04	-22 -05	52 -07	20 -07	28 -17	-16 04	-25 22
68. Process Feedback	02	-13	11	-03	20	33	15	41	34	36	14	-07	27	16	32
	-19 --	-22 --	08 --	-27 --	-32 --	02 40	-15 23	18 47	59 25	03 39	06 18	-23 02	-06 44	-04 27	41 31
	19	30	24	18	24	16	13	30	24	20	21	29	29	37	36
	-18 44	19 40	-12 42	17 19	21 32	-19 44	07 21	-02 45	27 23	26 21	-10 75	21 45	26 51	35 45	34 52
69. New Question	07	10	-12	-16	-01	11	06	-00	17	-03	-12	03	-20	-00	-14
	-59 26	-33 25	-46 -09	-41 -04	-83 05	24 12	01 28	01 10	40 -12	-18 00	27 -30	25 -16	34 -52	59 -31	83 -28
	19	10	25	13	13	08	21	-09	09	-02	06	-14	00	-11	-07
	49 09	-10 23	21 25	-14 29	-03 16	26 -06	24 19	-44 06	-04 19	08 -07	24 -09	-04 -22	-20 09	-29 09	-12 -06

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
70. Repeat, Rephrase, or New Question After Failure to Answer	47 37 52	36 54 28	25 18 28	26 -11 47	36 -34 45	-08 34 -16	-03 37 -13	-32 -12 -31	-22 -12 -30	-29 -- -30	-18 08 -25	-18 10 -27	-28 17 -44	13 36 -02	14 81 07
	08 15 08	-08 -23 05	22 33 18	23 28 23	26 55 23	-02 26 -38	06 53 -47	-09 13 -18	20 40 02	04 47 -21	-44 -43 -51	-48 -34 -68	-17 31 -33	07 38 -27	08 56 -19
71. Repeats Question After Failure to Answer Correctly	17 57 04	16 52 -01	-02 -22 16	06 -12 24	06 -25 10	-11 -27 -02	-08 -16 02	-14 -17 -09	-31 -56 -11	-24 -83 -19	-15 -21 -08	-27 -18 -34	-35 -46 -25	-09 -23 07	-02 -65 09
	11 -33 42	-08 -48 22	09 -32 38	06 -14 23	31 13 39	05 -09 12	16 33 -15	11 06 29	14 16 15	22 70 00	-28 -56 04	-24 -36 -20	05 01 23	12 15 14	26 46 13
72. Gives the Answer After Failure to Answer Correctly	26 26 33	25 02 48	32 40 38	19 -01 39	27 -01 36	-07 -12 -01	-11 -15 02	04 06 16	01 17 -23	-19 -34 -32	02 -41 40	01 -24 37	08 -06 36	-12 -34 11	-00 -74 17
	-20 -55 -04	-16 -19 -18	-18 -20 -17	03 34 -18	03 43 -12	27 22 32	05 -34 18	29 37 28	07 -10 13	16 -15 19	27 44 09	13 21 09	12 14 08	-02 -22 40	-10 -51 25
73. Calls on Another Student After Failure to Answer Correctly	23 19 30	25 34 25	21 -11 47	21 06 36	21 -54 36	-16 -16 -27	-07 -36 04	-02 16 -25	-00 -08 07	-06 -42 -00	22 -24 55	17 03 36	07 -51 51	-09 -43 23	05 -91 28
	13 -21 41	19 -13 52	-05 -39 30	-31 -69 -04	-04 -78 15	04 -46 53	-04 -48 43	10 -23 39	-14 -36 08	-05 -52 15	50 24 66	35 33 35	31 -24 53	-16 -56 16	16 -40 34

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	A
74. Another Student Calls Out Answer After Failure to Answer Correctly	-34 -48	-29 -50	-31 -56	-29 -44	-37 -40	10 26	08 26	22 21	14 33	15 36	-14 -33	-23 -01	-10 -61	03 09	01 -48
	-26 -19 -63	02 15 -25	-37 -17 -68	-14 16 -71	-30 39 -55	07 50	07 04	-09 57	-16 18	-22 15	09 43 -46	08 20 -17	-16 31 -39	-05 14 -35	-04 03 -13
K. Student Response Opportunities															
75. Response Opportunities/ Total Teaching Time	38 -26 55	29 -12 40	33 -26 47	24 -34 54	39 -75 55	25 -10 29	35 -08 42	22 -17 24	06 -11 13	11 -48 18	14 07 13	13 -22 17	-08 -29 -10	09 -21 20	20 10 23
	-15 -14 -07	-11 -18 01	-16 -60 -07	-19 -25 -12	-16 -29 -07	19 17 28	15 22 17	08 09 05	08 35 -06	-03 34 -10	41 44 41	17 34 09	17 -16 28	18 15 21	35 27 41
L. Student Initiated Questions (SIQ's)															
76. % SIQ's Irrelevant	02 11	03 37	-07 07	23 -05	08 09	03 -29 20	-10 -27 10	-22 -43 -05	05 -10 19	18 -- 18	17 16	13 07	37 79	37 56	44 --
						-06	-07	12	10	15	-17	-15	-22	-22	-28
77. % SIQ's Called Out	10 20	04 27	03 17	-00 03	16 26	-18 -30	-26 -31	-14 -25	03 -16	-06 -- -14	09 -02	10 04	17 16	20 06	22 -- 26
	10 05	17 14	-10 -07	-23 -22	-15 -21	01 42 -22	09 20 04	00 38 -04	-04 14 -19	01 30 -15	-07 -14	05 05	-22 -17	-21 -23	-16 -24

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
78. Praise of Question after Relevant SIQ															
79. Criticism of Question after Relevant SIQ															
80. % Relevant SIQ Given No Feedback															
81. % Relevant SIQ's Delayed						-23	-21	-01	-14	-03					
82. % Relevant SIQ's Not Accepted	25	23	20	04	21										
						-16 -32	-01 -15	-27 -31	-17 -35	-19 -29					

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
83. % Relevant SIQ's Given Brief Feedback	28	14	06	25	35	-13	-17	-13	15	17	50	59	71	52	61
	-24 41	-11 25	-06 09	15 29	03 42	— -22	— -13	— -25	— -05	-- 13	— 60	— 68	— 77	— 66	-- 66
	12	05	14	43	12	20	23	39	15	29	24	-09	07	-30	-14
	08 08	11 -06	59 05	68 24	83 -14	-45 42	-58 51	-06 54	-43 44	-83 51	53 11	06 -18	-20 10	-36 -22	-56 27
84. % Relevant SIQ's Given Long Feedback	-30	-23	-13	-17	-30	25	34	32	16	09	-34	-48	-32	-15	-49
	— -56	— -44	— -22	— -34	— -45	— 21	— 24	— 27	— 18	-- 05	-37 -47	-35 -66	29 -62	18 -47	-- -49
	-01	06	-14	-26	09	02	-03	-21	08	03	-25	06	-04	57	33
	-26 12	-19 26	-61 -03	-58 -04	-76 36	03 04	36 -12	28 -31	65 -12	73 -09	-41 -21	16 -09	14 -07	56 64	74 00
85. % Relevant SIQ's Redirected to Class	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
86. Behavioral Praise of Relevant SIQ	--	--	--	--	--	—	—	—	—	—	--	--	--	--	--
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	-- --	-- --	-- --	-- --	-- --	— —	— —	— —	— —	— —	-- --	-- --	-- --	-- --	-- --
87. Behavioral Criticism of Relevant SIQ	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
88. Behavioral Warning after Relevant SIQ															
89. Criticism of Question after Irrelevant SIQ															
90. % Irrelevant SIQ Given No Feedback															
91. % Irrelevant SIQ Delayed															
92. % Irrelevant SIQ Given Brief Feedback	44	12	36	20	31	-33 -40 -44	-33 -31 -38	-37 17 -84	18 81 -78	-94 -92	35	-35	47	33	62 -52 -81 32 21 81

Proc - Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
93. % Irrelevant SIQ Given Long Feedback															
94. % Irrelevant SIQ Not Accepted	-43	03	-27	-36	-42										
						-35	-31	-81	-32	-48					
95. % Irrelevant SIQ Re-directed to Class															
96. Behavior Criticism after Irrelevant SIQ															
97. Behavioral Warning after Irrelevant SIQ															

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
M. Student Initiated Public Interactions															
98. Student Initiated Comments and Questions/ Total Response Opportunities	-35 -07 -49	-13 -19 -17	-22 04 -39	-20 23 -47	-21 58 -31	12 09 09	-04 -04 -11	25 -02 25	08 09 08	18 66 16	-12 00 -19	-10 03 -19	-00 12 -08	03 27 -14	08 56 01
	-26 -07 -37	-02 04 -05	-24 37 -44	-17 33 -47	-10 40 -26	-22 19 -30	02 27 -02	-29 08 -38	-16 36 -31	-07 08 -06	01 -14 22	27 13 51	13 34 10	35 52 03	26 44 14
N. Student Initiated Comments (SIC's)															
99. % SIC's Relevant	00 69 -19	-07 40 -30	20 70 04	17 69 -09	-04 74 -22	-20 -33 -18	-30 -11 -49	-19 -31 -15	-24 -31 -20	-19 -34 -19	04 07 05	17 31 10	-07 36 -25	-04 -25 06	-07 -- -08
	09 -40 48	15 -07 40	19 -38 46	35 01 66	58 18 79	26 — —	22 — —	13 — —	12 — —	13 — —	01 -32 29	23 02 44	00 -66 17	-08 22 -34	-10 29 -19
100. % SIC's Called Out	13 — 25	-18 — 02	23 — 43	33 — 36	37 — 51	-32 -21 -33	-28 -06 -30	-20 11 -20	-25 -27 -24	-19 -17 -21	-05 — -03	-22 — -08	-00 — 12	16 — 15	29 — 33
	-11 -34 -09	05 -15 06	-27 -53 -19	-34 -28 -45	-24 -28 -28	-22 -49 -28	-27 -37 -37	-32 -61 -24	-19 -64 -11	-18 -48 -29	17 -26 31	06 -48 19	19 21 30	-08 -26 -01	18 -29 22
101. Praise of Comment after Relevant SIC	— — —	— — —	— — —	— — —	— — —	-12 — —	-15 — —	-15 — —	02 — —	05 — —	— — —	— — —	— — —	— — —	— — —
	— — —	— — —	— — —	— — —	— — —	-16 — —	-23 — —	-34 — —	-06 — —	-20 — —	10 — 04	-10 — -17	11 — 08	-25 — -37	-28 — -24
102. % Relevant SIC's Given No Feedback	20 — 27	24 — 34	25 — 22	14 — 21	34 — 36	14 — 17	-06 — -08	26 — 21	03 — 01	-01 — -03	02 — —	14 — —	-06 — —	14 — —	19 — —
	-13 — —	-20 — —	-03 — —	04 — —	16 — —	-22 -79 —	04 -72 —	-04 -59 —	-10 -64 —	-03 -50 —	-16 -25 —	02 -20 —	-13 05 —	19 45 —	08 25 —

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
103. % Relevant SIC's Delayed	--	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
	—	—	—	—	—	-13	-03	05	17	02	—	—	—	—	—
	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
104. % Relevant SIC's Not Accepted	-17	02	-05	-26	-32	16	24	23	23	21	08	07	35	24	23
	— -22	— -01	— -16	— -47	— 37	— 15	— 37	— 30	— 16	— 29	— 03	— 15	— 32	— 17	— 29
	24	18	17	-01	26	-03	-03	08	14	26	18	21	08	-11	25
	10 30	-02 31	-18 44	-29 22	-14 39	-26 12	-41 24	29 -01	29 05	56 19	-28 39	-37 42	04 12	-22 -05	39 22
105. % Relevant SIC's Accepted	11	-01	05	36	19	-09	-11	-22	-23	-40	-20	-20	-21	-44	-39
	71 -02	37 -12	50 -04	55 28	93 12	06 -20	08 -28	-19 -32	-34 -17	-51 -58	-41 -14	-11 -34	-18 -31	-62 -38	-- -64
	-12	-03	-06	12	-04	20	04	-06	-07	-10	-26	-24	-21	-16	-38
	-12 -02	25 -12	-04 -13	25 10	41 -04	66 00	75 -32	02 -08	-03 -11	-30 -05	39 -65	56 -61	-02 -57	-25 -12	-22 -40
106. % Relevant SIC's Integrated into Discussion Topic	-21	-15	03	-10	07	-04	03	01	08	16	31	21	02	-01	11
	-- -08	— -03	— 18	— 24	— 22	-07 04	27 -05	47 -15	17 04	61 12	65 23	39 16	-03 16	-18 15	-- 16
	-10	-22	01	-16	-35	03	-16	23	06	-14	14	00	-16	-06	-08
	19 -23	-12 -27	21 -06	09 -30	-25 -39	19 12	10 -14	22 20	43 02	10 -11	25 00	19 -22	-08 -12	-04 -10	-54 00
107. % Relevant SIC's Which Cause a Shift in Topic	—	—	—	—	—	—	—	—	—	—	-19	-27	-09	26	-01
	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
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	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
108. Behavioral Praise after Relevant SIC's															
109. Behavioral Criticism after Relevant SIC's															
110. Behavioral Warning after Relevant SIC's											27	11	48	40	57
111. Praise of Comment after Irrelevant SIC's															
112. % Irrelevant SIC's Given No Feedback						-01	-13	-26	00	12					
						39	53	53	28	35	-36	-04	17	19	-24
											-30	-25	-03	07	-23

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
113. % Irrelevant SIC's Delayed															
114. % Irrelevant SIC's Not Accepted	09	19	-10	-32	-41	34 / 37	38 / 37	55 / 48	37 / 36	43 / 47	27	33	21	42	25
115. % Irrelevant SIC's Accepted	-21 / -21	07 / 25	07 / -18	01 / 02	01 / 14	-18 / -10	-12 / -02	-16 / -16	-22 / -26	-23 / -28	-20	-10	-07	-03	03
						-20	-24	-37	06	25	46 / 48 46	17 / 41 -20	-17 / 00 -30	-36 / -34 -40	-05 / -45 43
116. % Irrelevant SIC's Integrated Into Discussion Topic															
117. % Irrelevant SIC's Which Cause a Shift in Topic															

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
118. Behavioral Praise after Irrelevant SIC's	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
119. Behavioral Criticism after Irrelevant SIC's	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
120. Behavioral Warning after Irrelevant SIC's	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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0. Self and Opinion Questions															
121. Self Questions/Process + Product + Choice Questions	-38	-19	-36	-33	-18	-09	-28	-08	-17	-01	03	-14	-10	-01	12
	-22 -43	-29 -17	-34 -39	-25 -37	52 -25	-39 -05	-45 -28	-45 -02	-41 -08	15 -03	18 -02	22 -35	-10 -07	-10 08	62 04
	11	13	08	17	09	10	10	00	-08	-02	-12	08	00	23	11
	04 06	03 21	47 -09	42 -29	34 -28	32 04	14 10	34 -11	08 -17	-03 00	-22 01	01 37	22 -16	39 -41	30 -37
122. % Self Questions Which Were Subject-Matter Related	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
	00	05	-02	-02	-08	31	26	35	12	-01	-16	-29	-12	01	06
	47 -23	42 -10	55 -14	25 -20	28 -20	80 10	68 06	28 40	22 05	27 -09	-07 -20	-44 -19	22 -30	-10 13	-15 13

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
123. % Self Questions Related to Personal Preference	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
	-06	17	08	04	03	05	16	27	22	16	-32	-17	-30	-38	-39
	-18 01	-32 44	-16 15	-13 18	16 04	04 07	-01 25	61 17	30 18	17 19	-33 -35	-14 -22	-50 -21	-41 -38	07 -60
124. Opinion Questions/Process + Product + Choice Questions	26	31	-03	-04	-10	-26	-49	-36	-22	-34	-13	-14	-18	-22	-17
	— 21	— 20	— -11	— -07	— -11	-29	— -58	— -43	— -22	-- -36	09 -23	13 -30	-09 -24	-11 -32	58 -32
	-13	-04	-02	18	10	-02	02	-11	-04	09	-19	09	-09	16	11
	-33 -13	-16 -03	27 -25	47 -39	46 -39	18 -05	09 03	15 -18	03 -05	00 14	-31 -21	03 16	15 -22	37 -42	39 -43
125. % Opinion Questions Given No Response	--	--	--	--	--	—	—	—	—	—	—	—	—	—	—
	-- --	-- --	-- --	-- --	-- --	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
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	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	-19 --	-23 --	-36 --	-24 --	-52 --
126. % Opinion Questions Followed by Praise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
	—	—	—	—	—	-20	-13	-12	-17	00	20	02	-06	-05	-07
	— —	— —	— —	— —	— —	30 -13	17 -06	21 -13	-25 -01	-37 16	70 —	23 —	60 —	07 —	-20 —
127. % of Opinion Questions Criticized	--	--	--	--	--	—	—	—	—	—	--	--	--	--	--
	-- --	-- --	-- --	-- --	-- --	— —	— —	— —	— —	— —	-- --	-- --	-- --	-- --	-- --

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
128. % Opinion Questions Given No Feedback															
129. % Opinion Questions Followed by Teacher Disagreement															
	08	25	08	11	08						32	44	62	23	37
	— 09	— 08	— 14	— 04	— 06										
130. % Student Opinions Accepted											-21	-39	-49	-27	-33
	20	00	20	12	-06	14	12	-02	-20	-18	00	04	10	14	06
	00 21	-15 04	16 21	04 09	-07 -12	— -04	— 12	— -06	— -21	— -27	09 -24	16 -36	17 00	20 -18	42 -35
131. % Student Opinions Integrated into Discussion Topic															
						-10	-09	-08	-04	-42					
						— -05	— -39	— 16	— -12	— -35					
P. Private Dyadic Contacts															
132. % Private Contacts Student Initiated	12	-10	15	06	27	21	-00	27	32	20	32	46	26	35	38
	49 06	04 -15	-17 22	-01 09	35 26	11 29	-23 11	-01 46	40 26	21 24	21 37	-09 71	19 28	31 37	-- 39
	08	09	04	05	17	28	38	25	08	15	-46	-03	-22	-10	-12
	-07 16	02 14	-10 12	-20 24	-23 33	04 39	38 40	-09 34	02 11	09 18	-49 -43	-20 12	-23 -26	-04 -20	31 -38

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
133. Student Initiated Work Contacts Involving Praise	-17 -57 -09	-25 -62 -15	-13 -49 -05	01 -16 07	-19 -26 -20	-14 15 -30	-06 20 -24	-03 25 -18	24 40 12	05 53 -03	-24 — —	-04 - -	-07 — —	-27 — —	-39 — —
	-44 27 -75	-30 -03 -43	-49 -02 -67	-57 -15 -80	-71 -66 -71	00 10 -20	04 15 -15	-07 02 -08	00 08 -10	-10 -26 -12	02 -10 08	-09 -04 -11	-06 -03 -08	-04 10 -17	-03 39 -15
134. Student Initiated Work Contacts Involving Criticism	12 13 13	04 11 04	22 22 25	19 -11 33	27 -23 36	09 30 04	01 05 10	13 36 12	16 30 04	18 69 15	— — —	— — —	— — —	— — —	— — —
	35 -21 58	11 -41 32	45 09 52	08 -31 25	27 -20 40	17 -31 39	-13 -52 06	18 28 15	13 -22 30	25 -03 32	17 -84 59	10 -71 39	42 -30 59	08 -34 33	40 -24 54
135. % of Private Work Contacts Student Initiated	09 -03 10	01 -14 00	20 -20 28	23 01 34	35 70 33	-01 11 -06	03 -- 03	04 27 -06	26 57 05	10 61 03	06 01 08	-09 -15 -08	35 -10 46	19 02 25	09 -- 11
	22 44 24	01 08 07	-01 08 -12	-18 -28 -06	-21 -43 -04	-01 42 -21	-15 29 -40	02 -06 03	15 16 17	00 -03 03	-10 -15 -02	07 -06 34	-09 -35 00	-05 -20 26	08 16 07
136. % Student Initiated Contacts Delayed	-26 -13 -35	04 -24 03	-28 -29 -41	-32 -33 -37	-41 -67 -44	-03 -43 -03	25 -19 26	-04 01 -18	-08 -05 -11	08 50 07	37 — 42	62 — 72	27 — 36	21 — 35	41 -- 46
	-22 -04 -37	00 -26 19	-13 35 -34	-06 34 -39	01 41 -15	-23 -14 -29	-15 04 -30	-14 34 -42	28 61 00	18 53 15	36 -04 63	48 19 66	36 00 50	22 35 11	47 57 47
137. % Student Initiated Contacts Given Brief Feedback	19 -17 28	05 -34 18	21 -29 35	27 -13 45	51 61 51	-03 -14 02	-02 -14 08	11 02 20	28 47 18	19 15 21	20 09 23	-09 -27 -03	44 15 53	29 30 30	22 -- 22
	07 11 26	-01 05 10	-06 -18 -12	-30 -35 -27	-28 -13 -23	-04 44 -18	-14 36 -33	02 -24 05	01 03 02	-16 02 -17	-23 -29 -14	-16 -28 00	-10 -34 -10	-04 -20 16	-08 15 -30

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
138. % Student Initiated Contacts Given Long Feedback	-15 39 -33	-18 41 -47	03 21 -09	-01 40 -20	-16 81 -26	04 41 -12	-04 23 -22	-10 35 -33	-03 11 -13	-19 69 -35	-38 -03 -53	-29 27 -53	-32 -26 -35	-30 -37 -31	-43 -- -46
	22 36 11	05 13 -04	05 10 03	08 -09 25	00 -62 18	00 27 -30	-08 14 -37	-03 09 -09	12 08 18	05 -19 17	02 26 -36	17 37 -08	-21 -14 -28	-09 -18 14	02 -04 07
139. % Student Initiated Contacts Involving Personal Concerns	-37 -06 -46	-30 -02 -35	-51 -04 -65	-40 -06 -63	-55 -82 -57	-17 -45 -00	-15 -21 -04	-13 -10 -10	-23 -39 -05	-08 -67 08	-26 -16 -25	03 -19 04	-34 -02 -42	-33 09 -34	-19 -- -18
	-09 -38 -03	09 -09 18	03 -07 23	22 37 02	22 44 -01	-20 -38 -23	-12 -28 -10	-26 02 -38	-19 -09 -32	-11 08 -29	12 09 19	-05 05 -17	07 16 03	-12 01 -39	-07 00 -13
140. % Student Initiated Requests Granted	33 02 51	34 37 45	20 21 33	30 -05 52	45 27 48	12 -05 16	-14 -08 -21	07 -37 21	01 -21 14	-14 -56 -09	-01 -16 -02	04 -46 12	-04 -26 -01	-00 27 -07	-20 -- -22
141. % Student Initiated Requests Delayed	-17 33 -33	-22 08 -46	-15 02 -30	-27 25 -49	-47 54 -58	-10 -48 04	07 -22 25	01 07 -03	08 -11 22	26 66 24	28 60 17	28 72 11	08 03 16	03 -71 29	39 -- 44
	-36 -24 -42	04 -28 19	-29 29 -46	-20 41 -51	-11 49 -24	-10 -08 -04	-01 -03 07	02 43 -16	09 60 -24	06 50 05	18 -02 39	29 23 35	23 18 35	26 49 -05	37 63 26
142. % Student Initiated Requests Not Granted	-22 07 -34	-23 -43 -15	-16 -09 -24	-01 38 -23	-08 26 -11	00 31 -10	11 16 16	-04 28 -14	03 22 -12	16 48 13	-31 -61 -26	-40 -40 -43	-15 29 -22	-02 63 -06	03 -- 08

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
143. % Student Initiated Contacts which are Personal Experience Sharing	-02 -21 03	11 15 -06	06 21 07	21 52 -30	16 38 -11	-07 -18 -08	10 18 -09	-02 21 -17	04 30 -40	05 25 -16	19 27 08	10 19 -06	10 43 -14	05 14 -16	07 05 10
144. Private Work Contacts/ Private Work Contacts + Public Response Opportunities	-31 -01 -37	-36 -15 -40	-13 -04 -11	-06 33 -22	-15 57 -22	08 13 07	-09 14 -19	22 20 26	15 08 20	25 65 21	-10 01 -14	-17 -01 -24	01 28 -08	12 23 03	05 35 00
	17 38 01	21 33 10	17 50 08	03 16 -09	-12 15 -22	-15 -21 -12	-11 -02 -17	-03 -21 03	-14 -18 -11	-04 -16 02	-34 -41 -27	01 05 -01	06 13 -04	24 40 -04	-01 45 -39
145. Procedural Contacts/ Procedural Contacts + Response Opportunities	-43 06 -51	-35 -17 -34	-34 07 -37	-20 39 -43	-25 69 -34	03 04 04	-11 10 -15	09 06 14	03 -16 13	22 54 19	-14 -05 -18	-15 03 -22	-01 22 -09	00 11 -09	06 34 00
	20 15 16	21 -01 29	21 48 18	11 15 05	15 25 04	00 -16 07	11 -10 24	01 -26 12	-14 -26 -07	07 -09 12	-22 -28 -17	07 -03 19	07 27 -07	23 44 -22	05 47 -34
146. Teacher Initiated Work Contacts/Teacher Initiated Work + Procedure Contacts	-07 -09 -12	-07 20 -23	13 06 08	-02 07 -07	-25 -51 -25	04 10 04	-02 25 -11	09 20 09	-01 -09 04	-07 23 -11	-23 20 -36	-31 37 -69	-18 16 -28	-09 08 -18	-54 -- -53
	-05 21 -21	02 53 -38	-08 -09 -11	-05 14 -19	-31 -13 -33	-20 -02 -31	-24 25 -54	-05 08 -10	-04 08 -12	-21 -21 -22	-17 -48 26	-03 -01 00	10 -41 42	-04 -25 33	-05 -31 20
147. Teacher Initiated Work Contacts Involving Praise	-19 -52 -17	-06 -13 -12	-26 -35 -33	-17 -56 -05	-14 -93 -08	-23 -26 -29	-12 -20 06	-28 -17 -48	-01 30 -53	-19 -29 -33	11 — 18	17 — 17	23 — 14	40 — 26	31 -- 28
	-16 -13 -10	-21 -03 -21	00 11 -06	-16 -02 -18	-08 -18 03	-03 45 -34	-02 30 -24	-16 15 -29	-21 15 -46	-24 05 -37	20 22 20	03 05 01	01 -21 14	-04 -14 13	19 -13 42

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
148. Teacher Initiated Work Contacts Involving Mere Observation	15 34 08	20 24 13	25 -18 34	14 -10 25	22 12 23	-34 -13 -39	05 07 01	-36 -30 -43	-51 -33 -62	-38 -61 -38	← — —	— — —	— — —	— — —	— — —
	-03 -13 10	-14 -03 -18	15 -06 22	08 01 17	-03 -18 08	-10 10 -14	-24 32 -45	-12 -12 -14	08 40 -05	-02 46 -07	-27 — -37	-35 — -50	-20 — -37	-34 — -60	-65 — -76
149. Teacher Initiated Work Contacts Involving Brief Feedback	06 11 03	06 05 02	14 -36 18	-09 -38 -03	01 -13 02	-33 -13 -38	-03 -39 -01	-31 -02 -41	-32 36 -50	-23 73 -27	04 -17 16	-00 -21 17	-16 -44 07	-06 -38 26	09 -- 08
	04 -34 32	10 -04 23	16 -16 29	19 17 22	17 19 19	07 -14 31	02 -18 25	15 01 21	18 20 19	05 -05 09	34 23 41	39 20 49	07 19 14	29 48 19	32 44 29
150. Teacher Initiated Work Contacts Involving Long Feedback	-38 -26 -43	-04 -16 -06	-39 38 -51	-46 36 -63	-39 06 -41	-33 22 -45	-02 33 -15	-34 22 -51	-50 -12 -65	-50 -47 -50	-13 21 -33	-02 26 -27	-17 47 -56	-07 35 -47	-28 -- -35
	01 55 -35	04 23 -11	-26 17 -42	-26 -17 -34	-22 -25 -25	-21 -03 -38	-24 -54 -12	-22 17 -35	-21 -20 -24	-10 -07 -15	-19 -28 -13	-17 -31 -09	05 -23 13	-07 -48 27	14 -38 32
151. % Teacher Initiated Contacts which are Personal Experience Sharing	09 -16 26	06 10 -05	23 12 41	29 31 26	31 22 36	21 23 37	40 62 16	00 -06 52	-04 -09 -03	14 21 00	08 36 -28	-10 24 -52	03 55 -20	07 38 -39	-21 20 -47
152. % Teacher Initiated Procedural Contacts Which Were Management Requests	-47 -07 -54	-25 -29 -24	-41 13 -52	-22 29 -39	-35 58 -42	-09 -33 -05	-03 -25 02	-04 -07 -07	-05 -23 03	20 64 16	27 — —	20 — —	02 — —	06 — —	21 — —
	01 — 19	09 —-05	-12 — 07	04 — 06	09 —-05	02 18 -09	08 -15 19	03 -33 15	-26 -45 -17	-12 -37 -07	08 -52 42	-29 -57 -16	19 -09 33	05 02 09	05 -09 08

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
153. % Teacher Thanks Student for Doing a Favor Request	15 57 --	10 38 --	-16 -06 --	-06 -03 --	-05 14 --	-15 -04 -22	-06 10 -18	01 01 02	14 23 07	13 52 08	20 43 -11	11 22 -51	-06 -15 04	00 -30 10	11 -- 05
	-14 -28 -14	-26 -33 -34	-09 01 -17	08 14 -03	20 39 12	-12 18 -28	-08 17 -22	-08 06 -14	-07 20 -24	-24 -03 -29	07 -- 49	04 — 33	11 — 08	18 — -01	21 — 18
154. Teacher Thanks Student Following a Management Request	-11 -- --	11 — —	-24 — —	-33 — —	-15 — —	-22 — -30	-14 — -23	03 — -05	-02 — -08	-16 — -18	18 55 16	08 33 05	14 -05 16	03 -10 08	23 -- 24
	-12 -30 -13	-26 +47 -29	-02 07 -16	-01 01 -27	11 30 -41	-16 -21 -20	-05 07 -21	-05 09 -14	08 43 -31	-19 32 -48	-30 -19 -36	-21 -02 -27	-17 -08 -34	-14 36 -67	-30 31 -50
0. Combined Teacher Evaluation Statements															
155. Academic Praise/Academic Praise + Academic Criticism	23 -58 46	-02 -53 23	21 -35 38	31 -18 55	34 04 38	-04 -16 -03	03 18 -09	-11 -21 -15	07 -15 20	-04 -43 -01	23 54 18	14 26 -13	20 24 09	22 33 25	16 78 21
	-06 15 -13	05 30 -08	-11 -16 -16	05 08 06	-08 -20 01	04 52 -26	18 61 -12	-15 -11 -25	05 20 -07	-09 05 -08	-15 45 -60	-17 40 -54	-24 -08 -37	02 07 -05	-21 -04 -27
156. Behavioral Praise/Total Behavioral Contacts	10 -08 10	-04 -12 -07	-13 -38 -15	-04 -40 02	-02 -69 00	05 — 08	-00 — -01	05 — — 10	-06 — — 07	05 — — 09	— — —	— — — —	— — —	— — —	— — —
	-07 -09 00	-13 32 -23	13 -33 18	-04 -24 06	-06 -35 04	-19 -45 -05	-34 -44 -28	-08 -82 02	-18 -57 -04	-13 -65 00	-20 -- -22	-16 — — 20	-02 — — -09	01 — — 13	-04 — — 06
157. Behavioral Warnings/ Behavioral Warnings + Behavioral Criticism	31 04 37	35 35 37	09 36 04	21 -19 37	42 35 43	06 01 09	03 -02 07	20 08 29	25 36 18	13 52 10	06 — — 02	05 — — 09	-20 — — 17	-08 — — 12	45 — — 48
	00 -13 05	-11 15 -23	-10 -30 -05	-05 27 -21	-04 -02 -04	00 09 -05	31 59 16	04 -18 11	16 49 -03	-18 35 -31	-22 -09 -31	-09 14 -24	-20 -51 -09	-03 -11 06	-38 -39 -40

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	A
R. Discipline and Control Errors															
158. % Discipline Contacts Involving One or More Error	-24	-14	-21	-23	-41	-19	-01	-21	-03	13	-20	05	-17	02	-16
	12 -33	11 -23	-09 -25	-03 -32	35 -46	-08 -18	-01 19	-12 -12	-07 04	82 06	— —	— —	— —	— —	— —
	26	05	11	-06	09	-09	-05	-06	-10	02	19	11	-03	-19	-09
	48 07	10 -02	30 04	-31 27	-35 36	34 -19	05 -05	47 -23	-10 -08	-15 09	35 -11	18 -05	24 -22	-11 -42	-19 -07
159. Target Errors/Total Errors	13	-01	24	18	20	07	10	08	-13	00	—	—	—	—	—
	— —	— —	— —	— —	— —	12 —	35 —	41 —	-36 —	-- —	-37 --	-42 --	16 --	-03 --	-- --
	15	29	27	24	13	19	21	05	-04	-05	—	—	—	—	—
	-25 46	36 24	15 39	47 04	41 03	— 29	— 28	— 08	— -06	-- -04	— —	— —	— —	— —	— —
160. Timing Errors/Total Errors	-22	-36	-62	-16	-04	-02	-12	02	-19	-01	—	—	—	—	—
	+18 -23	-53 -23	-89 -49	-49 02	-- -04	-31 —	-64 —	-17 —	20 —	-- —	— —	— —	— —	— —	— —
	03	13	-02	-20	-16	06	22	07	06	04	--	--	--	--	--
	-- 28	-- 51	-- 18	-- -04	-- -02	-- 15	-- 21	-- 12	-- 08	-- 13	-32 --	-14 --	-36 --	40 --	-- --
161. Overreactions/Total Errors	39	47	50	38	51	-35	-38	-33	07	-24	--	--	—	--	—
	— —	— —	— —	— —	— —	-09 —	06 —	01 --	26 --	-- --	-- --	-- --	— —	-- --	— —
	-10	-26	-16	01	12	-09	-15	01	10	25	39	01	61	48	76
	59 -49	03 -46	41 -35	-08 08	05 13	-- -24	-- -19	-- 00	-- 15	-- 23	-- 69	-- 55	-- 71	-- 22	-- 93
162. Nonverbal Control Contacts/Total Control Contacts	04	12	04	11	04	-25	-24	10	-01	-07	-37	-26	-05	-37	-43
	-02 09	09 18	20 01	16 07	-51 09	-31 -30	-30 -35	-05 04	24 04	-60 -05	— -37	-- -39	-- -10	— -34	-- -39
	-16	-15	14	19	12	07	-09	22	26	17	-29	-25	-11	14	-16
	-35 -05	-43 00	16 12	-27 44	-20 21	03 11	-20 -02	38 19	16 35	24 13	10 -59	-08 -35	47 -46	29 -06	-04 -19

Process Variables	Whole Class Interaction, Morning					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
S. Combined Teacher Feedback Data															
163. Repeat/Repeat + Rephrase + New Question	-48	-49	-46	-24	-49	-18	-17	-12	-13	-20	-08	-28	-26	-00	10
	-14 -67	-50 -50	-55 -46	13 -56	-- -67	-36 -11	-37 -03	-08 -15	-12 -15	-- -36	-15 -00	-34 -16	-40 -10	-05 03	-06 13
	06	-02	-13	-14	06	15	26	24	17	28	-28	-29	01	-02	11
	-20 20	-12 02	-54 08	-32 -01	-27 15	-18 43	22 34	01 34	14 21	68 30	-67 09	-35 -26	-49 33	-18 23	18 08
164. Rephrase/Repeat + Rephrase + New Question	43	38	44	12	32	11	-04	07	06	02	18	25	18	13	18
	08 56	31 40	45 45	-21 33	-- 43	25 10	28 -20	22 05	-02 13	-- 06	23 16	46 10	42 03	00 23	-16 25
	-03	05	-09	-14	-18	-05	-30	-18	-03	-06	17	25	-04	03	-11
	22 -30	28 -18	48 -32	34 -59	20 -40	12 -29	-22 -50	07 -23	-02 -07	-46 -13	54 -15	25 26	38 -29	15 -14	-26 -04
165. Brief Feedback/ Brief + Long Feedback	22	04	15	14	41	03	-03	09	25	29	30	27	34	17	40
	-05 31	-35 21	-51 38	-44 45	-09 46	-19 12	-24 12	-20 23	38 18	22 34	-24 50	-43 61	-34 63	-34 47	-- 52
	-05	-04	12	12	15	16	10	28	20	08	05	06	-07	15	-03
	-48 25	-19 10	-17 24	11 14	40 09	-14 45	03 22	-04 42	24 20	18 09	-03 10	-06 12	09 -11	42 -11	41 -23
T. Math Contacts															
166. Total public math contacts/Total public math contacts + Total private math contacts	09	18	-08	-15	-14										
	12 08	44 08	07 -16	-04 -18	-26 -15										
	16	06	38	11	26										
	-10 47	-26 39	-09 72	-23 58	-27 41										

Process Variables	Whole Class Interaction, Mornings					Whole Class Interaction, Afternoons					Reading Groups				
	WK	WD	R	AC	AR	WK	WD	R	AC	AR	WK	WD	R	AC	AR
167. Total teacher initiated private math contacts/ Total public math contacts + Total private math contacts	05 -54 05	-12 -68 -19	08 -62 15	09 21 07	32 -- 32										
	-35 00 -62	-25 40 -72	-48 -11 -78	-28 12 -73	-44 42 -60										
168. Total Teacher Afforded Math Contacts/Total Math Time	07 16 01	27 67 -19	-20 -22 -37	-09 02 -34	-12 47 -25										
169. Total Math Response Opportunities/Total Math Time	36 10 74	30 08 59	46 -09 86	25 -04 66	39 09 57										
U. Dyadic Contacts															
170. Total Teacher Initiated Contacts/Total Teaching Time	-05 -26 08	03 -47 31	03 -03 04	-20 14 -40	-22 38 -39	18 -29 34	27 -23 44	16 -28 18	-05 16 -08	-01 35 01	-08 12 -21	04 46 -21	05 12 -04	15 58 -34	00 77 -27

[1]For each set of 3 coefficients, the top (centered) coefficient is for the entire sample of teachers, the coefficient at the lower left is for low SES teachers, and the coefficient at the lower right is for high SES teachers. For each process variable, the top two rows of correlations are from Year 1 (1971-1972 school year), and the bottom two rows are from Year 2 (1972-1973 school year). Probability values are indicated by underlining. $p > .10$ where no line appears; $.10 > p > .05$ where one line appears; $p < .05$ where two lines appear.